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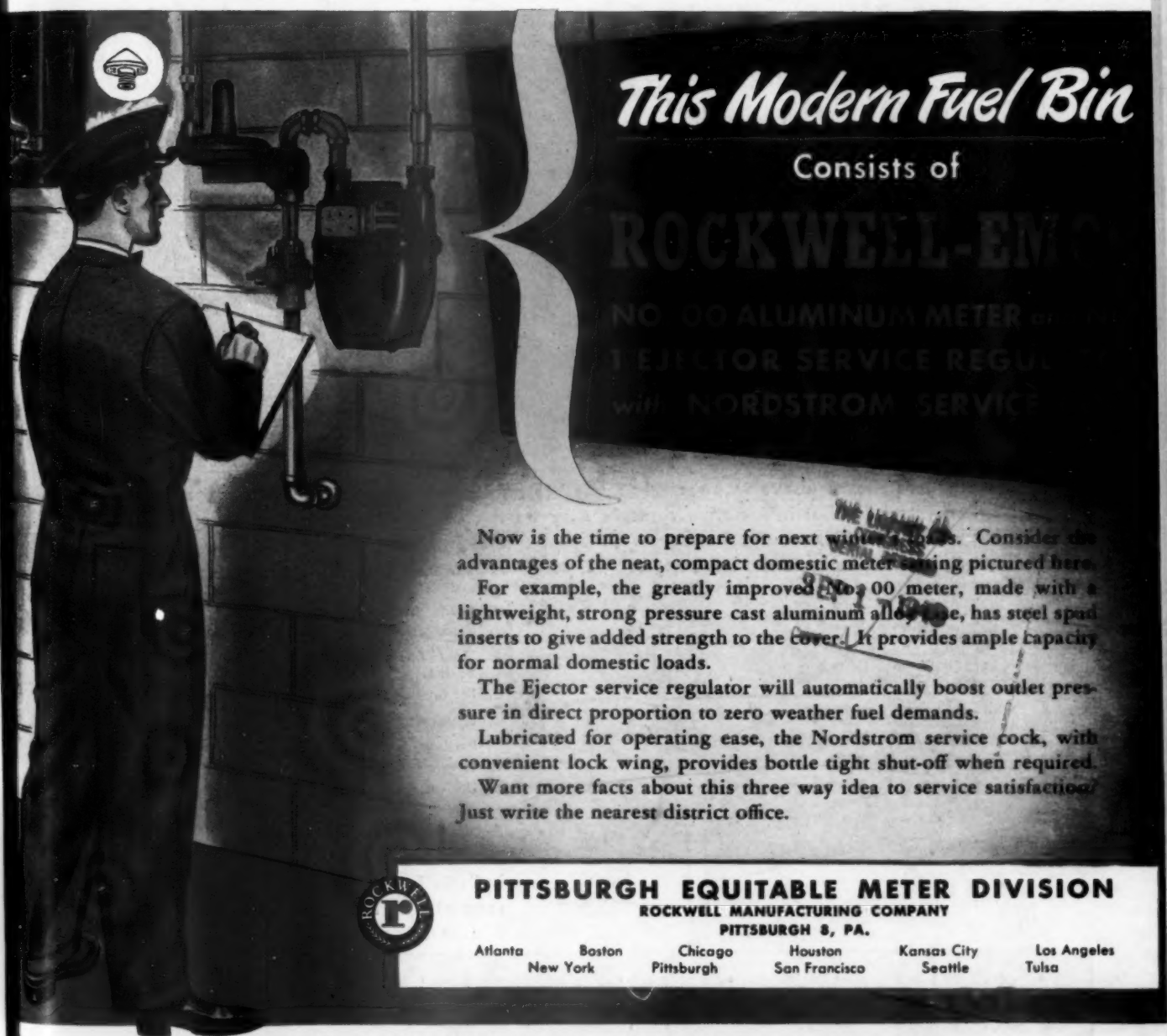
Gas Journal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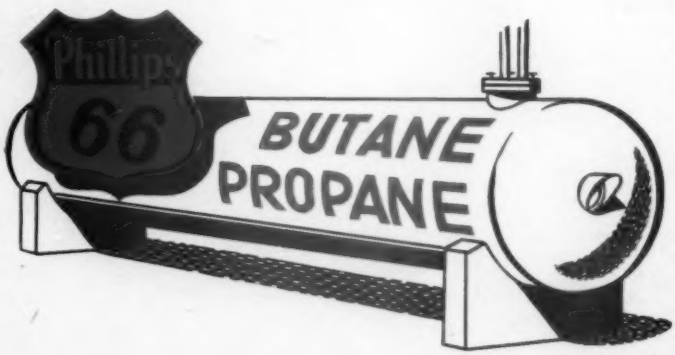

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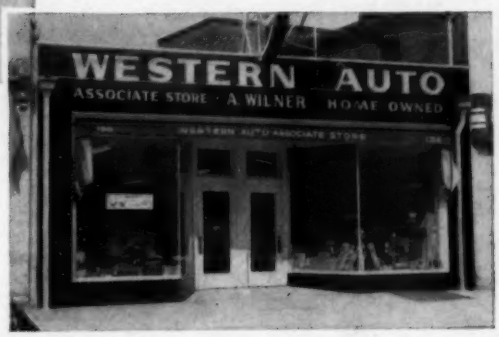

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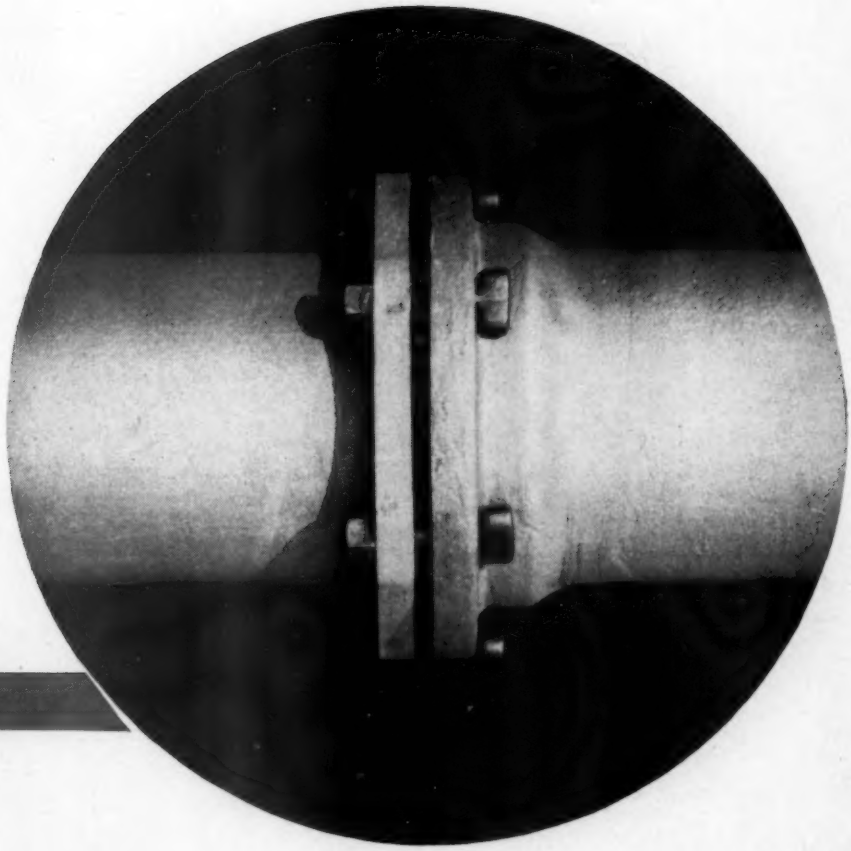

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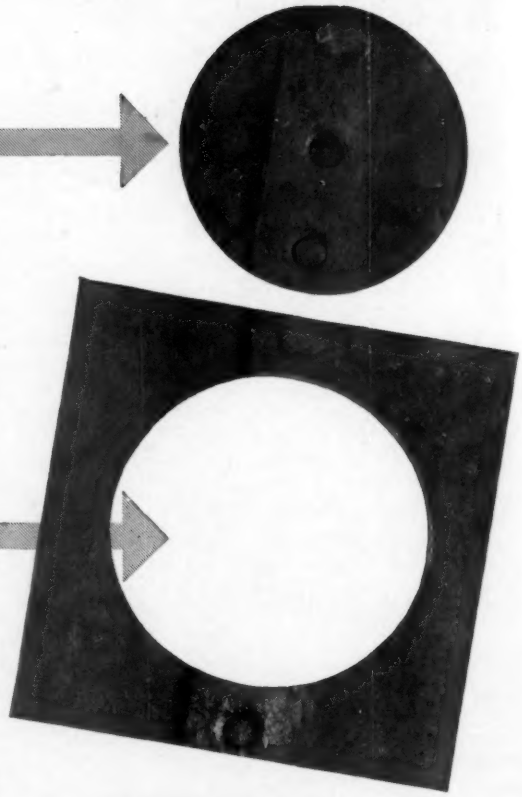

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AMERICAN Gas Journal
ESTABLISHED 1859

VOLUME 171 JULY 1949 NUMBER 1

This month . . .

In the main we subscribe to the theory that the less said about birthdays the better; but with AMERICAN GAS JOURNAL rounding out ninety years of uninterrupted service to the American gas industry it would seem almost disrespectful to the founders if we allowed the historical date, July 1, 1859 to be entirely forgotten.

It is interesting to note that the original publication—then called *The American Gas-Light Journal*—was devoted primarily to the publication of information of interest to investors in "gas-light shares." And that early editor observed with proper respect that investments in all gas companies would represent a "gross capital of fifty, perhaps fifty-five millions of dollars!"

If fifty or fifty-five million dollars invested in the industry then justified the distribution of financial information on its progress, it seems only reasonable to assume that to-day, with that total investment well over six billion dollars, there exists a much greater need for the same sort of information.

So we start our ninety-first year by introducing a new financial section, edited by John F. Falvey, who was for thirteen years on the staff of the *Wall Street Journal*, and for the last seven years public utility editor of that authoritative publication.

Mr. Falvey will analyze monthly the most significant developments in financial circles, as they affect gas utilities, and he will keep current the "Index of Yields, Selected Utilities Stocks" that will be found this month on page 13.

Try as he may, however, we are afraid our financial editor will wait a long time before he can distribute so cheering a report as the one found in our July 1, 1859 edition, in which the attractiveness of gas securities was illustrated by: "Instance the old New York Gas Light Company . . . which has steadily paid its eight and ten percent, per annum for many a long year, with an occasional extra dividend of ten percent, and now one of twenty percent on the first of May last . . ."

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Elliott Taylor • Editor

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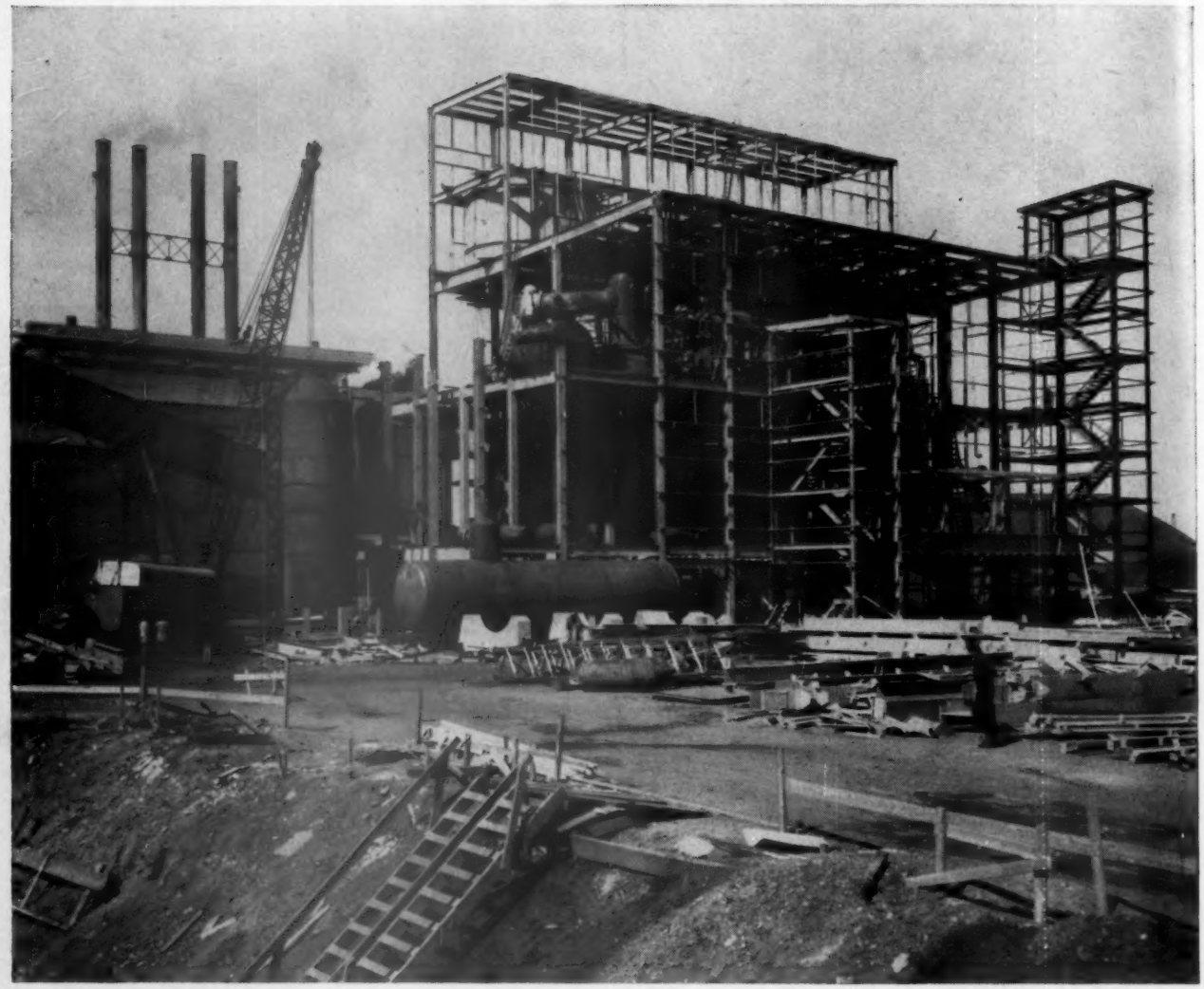

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Editorial:

A Weak Case Lost

THE Federal Power Commission turned up a weak case when it tried to interfere with the sale of 96,000 acres of gas reserves by Panhandle Eastern Pipe Line Company to the Hugoton Production Company, a newly organized Delaware corporation owned by Panhandle stockholders. We are convinced that the Commission knew it had a weak case; and if it didn't it certainly found it out on June 20 when the Supreme Court settled the matter by denying FPC the right either to investigate the transaction or to seek further court injunction to delay it.

The court pointed out in its majority opinion that it has been the custom in the natural gas industry for companies to trade freely in gas leases and . . . "Thus for over ten years the Commission has never heretofore asserted the right to regulate transfers of such leases. Failure to use such an important power for so long a time indicates to us that the Commission did not believe that the power existed."

The long range implications of the decision are of considerable importance to the natural gas transmission companies owning all or part of their own production, and to all of the producing areas from which long distance pipeline gas is supplied.

Unquestionably the FPC brought its present troubles on itself when it first instituted its general rate theory of requiring pipelines to introduce their own production into their rate structures at depreciated cost, instead of at a fair value for the gas as a commodity. It was inevitable that gas transmission companies would seek some method whereby they could get at least as much for their own production as they had to pay for gas they bought from others. A separate and independently owned producing company now appears to be the answer.

The ecstatic whoops with which the financial press greeted the news, seeing it as a means whereby the transmission companies could rejuggle ownership of their reserves to the immediate benefit of stockholders, do not seem to be justified by a realistic view of the facts in the situation, however.

In the first place, the gas acreage that Panhandle sold to Hugoton was not developed, and no gas from the leases was going into Panhandle lines. And secondly the contract which Hugoton subsequently negotiated to sell gas to the Kansas Power and Light Company was an intrastate transaction.

The question still remains unanswered as to whether a company could divest itself of any of the reserves that are actually necessary to the operation of a system on which a certificate had been granted, with those reserves implicitly dedicated to the line at the time it was proposed. The Commission will contend, and certainly with understandable logic, that the ownership and dedication of the known reserves was a basic consideration on which it was granted the original certificate.

And even should the transfer of production to a new corporation, owned outright by pipeline stockholders as is the case of Hugoton, be effected over FPC opposition, there would still be no stockholder profit in the transaction until and unless the Commission granted a rate increase based on the new price that the line proposed to pay for gas in the field. Since the Commission has the right to disallow costs improvidently incurred, or incurred in lack of good faith, to become part of a rate base, the likelihood of relief by that route would be small indeed.

The Commission could resolve this whole matter by ceasing forthwith its attempts to interfere in any phase of the production and gathering of natural gas—as the Natural Gas Act specifically enjoins it from doing, and by allowing a fair price for gas in the field regardless of who owns the production.

The alternative is for every natural gas transmission company to divest itself of any reserves not specifically dedicated to a line, and to make certain that any future production is owned by an entirely separate corporation. The result will not be, cannot be, exorbitant prices for gas in the field. But in the long run it may well serve to eliminate the gross inequities that the Federal Power Commission strives so manfully to maintain.

New England Needs Gas

NEW ENGLAND has waited a long time for natural gas, and it must be heartening to that fuel hungry area to hear Governor Dever of Massachusetts announce that he has had "convincing assurances" that natural gas would be piped into the state by Christmas, 1951. Since the governor is an old time friend and political confidant of President Truman, it is only reasonable to assume that when he says "convincing assurances," he knows what he is talking about.

Another note of realism is struck in the observation that, while he had no interest in the rival ambitions of competing pipelines, "Massachusetts must have a dedicated capacity of sufficient natural gas for its present and future needs without being subject to deflections and deviations for places en route to this state."

This is a wise prerequisite, and one that should be incorporated into any certificate that is granted for transporting gas into New England. Once natural gas and manufactured gas are working together in that area, as they inevitably will have to, the availability of adequate fuel may be expected to work a profound change in the economy of the entire northeast. The governor says it will enable the industries of his state to extend their facilities and functions. In our opinion it will do more than that; it will reverse the trend of manufacturing away from New England, a matter that has caused its established citizenry grave concern over the past decade.

New England's new gas supply, when it is finally made available, must be dedicated in its adequate entirety to New England. It cannot and should not be subject to the political vagaries of future regulation, nor imperilled by the clamorous importuning of any single community or locality along the route.

Elliott Taylor

Appliance Venting Standards Still Remain An Unresolved Utilization Problem

by Carl H. Dean

Carl H. Dean

Director of Education, Domestic Heating Division, Stewart-Warner Corp.

"Disposal of products of combustion from appliances to the outside of buildings constitutes one of the major problems of utilization and one that in the past has had perhaps, the least scientific approach. There are many factors that enter into the design of a proper venting system for one or more gas appliances." Mid-year Report—Fiscal Year 1947-48 for PAR PLAN by the Production Advertising and Research Committee of the American Gas Association.

The methods to be used for accomplishing the disposal of flue products comprise one of the most controversial subjects in domestic utilization of gas.

The subject has been made to appear much more complex than it really is because it is agreed that "The best way to vent a gas appliance is the shortest, simplest most direct method which will exhaust the products of combustion to the outside atmosphere at the highest temperature possible to maintain."

The controversy arises from attempts to adapt appliances to applications for which they are unsuitable, or to cut installation costs for competitive reasons by providing a venting installation which does not comply with basic engineering principles.

No one questions the importance of the problem and it is, therefore, astonishing, to say the least, to hear the following statement unchallenged when made from the platform at the AGA. Domestic Research and Utilization Conference at Cleveland, Ohio, on March 31, 1949: "Although studies are now being completed on both home humidity control and venting of direct space heaters at Purdue University, and the American Society of Heating and Ventilating Engineers is preparing material for publications on results of barometric damper research, there is apparently no venting research in progress at present. If research is currently being done, it is not being widely publicized."

How and why can this be true? As early as 1941 the AGA Laboratory Staff appealed for permission to conduct research on the venting problem which they well realized was becoming serious as a result of changing methods of residential construction. Their appeal was not heeded. Eight years later they are still pleading. Why is this? Research is not, or at least should not be, conducted or denied for the benefit of any manufacturer or group of manufacturers, or any utility or group of utilities. Research should be conducted for the good of the public—the people who pay their gas bills each month or purchase their LP-gas as needed. Unless research is conducted along such lines, it better be left undone. Research is seeking for the truth, not seeking for a bucket of white-wash.

It is customary in a series of articles, such as this, to present a problem in its entirety with all its ramifications and then suggest a solution in the final installment. Anyone having any solution to this appliance venting problem should speak out at once, and loudly. At the risk of sacrificing the climax, we are now going to outline a method of procedure which, if followed, can do much to alleviate the present situation and prevent the repetition of many glaring monstrosities which the trustful public has accepted as venting installations.

We are now on the verge of the greatest expansion which the gas industries have ever experienced. The huge natural gas transmission program assures this. Millions of new customers are going to be added to our lines in the immediate future. Communities all over the country are going to draw up codes and ordinances governing the application and installation of gas appliances in the home. Many are already formulating such regulations. We all hate to have our activities regulated but let's be realistic about it. We are going to be regulated, so it behooves us to take part in the framing of the regulations. In the past, too many of these regulations were imposed hurriedly because of fright or spite and consequently did much harm and very little good. Provisions for enforcement were inadequate, and the codes are now ignored but remain in effect as constant threats against the general welfare of the industry.

Every utility man knows the mess he can get into and the customer ill-will which can be generated by stringent company rules governing the use of its product. The utility, by nature of its business, is, in most cases, a virtual monopoly. At least it is considered as such by the public and its rules are often looked upon as infringements on the private rights of the individual even though drawn for his protection.

Utilities Can Enforce Codes

Some of us have had the privilege of operating under well thought out, properly drawn municipal regulations and as a result realize that the utility is the very best agency for enforcement of such regulations. Utility employees hold their positions by merit. They are not political appointees subject to replacement by every change in administration. They are imbued with a high sense of responsibility to the public and when backed by civic authority can, and do, protect the customer from his own carelessness and lack of knowledge. So we should see that all regulatory bodies be furnished with up-to-date specifications covering all phases of installations of gas piping and appliances.

The *Proposed American Standard for Installation of Gas Piping and Gas Appliances in Buildings* is an excellent beginning and indicates the awareness of the industry to the need for national standards. But we do not have authoritative comprehensive specifications covering the venting of appliances. It was surely intended that such specifications would be the result of research on the subject. If the progress made in the last ten years is any criterion of what we can expect in the future, none of us will

ever see such specifications. These specifications should be based on research plus practical experience.

All right. We have the research. The findings presented by The Engineering Experiment Station of Purdue University in Research Series Bulletin #103 entitled, *Research in Venting Direct Gas Heaters When No Chimney Connections Are Available,* American Gas Association Research Project DGR-1-DH, are sufficient basis for appliance venting specifications when used in conjunction with the practical experience of dozens of men in the industry who are capable and ready to participate in such work.

A committee composed of men like D. M. Baker, C. E. Blome, L. J. Fretwell, H. W. Geyer, Fred Heimerdinger, W. B. Kirk, J. C. Mueller, H. W. Presseur, Leon Ourusoff, G. J. Sandusky, C. G. Segeler, J. A. Sheahan, John Knox Smith, Dean Strickland, R. K. Thulman, C. C. Young, and, of course there are many, many others well qualified, could with their knowledge and experience with the problem and the drawing up of codes, prepare venting specifications which would be practical, comprehensive rules. The enforcement of these rules would, to a large extent, solve this industry problem in a remarkably short period.

We need research, more research and continuous research on this venting problem. It changes as residential construction methods change. It changes as new appliances are developed. The specifications should be drawn subject to revision as research proves such revision to be necessary. Our impending expansion program cannot wait on further research on the subject. All over the country regulations are being put into effect requiring that all gas heaters in transient accommodations be vented. Why is this? Simply because of tragic events which have occurred where unvented heaters were used in small tightly constructed sleeping rooms. But these regulations do not include adequate specifications covering the venting installation. A midwestern state fire marshall recently said that his office put into effect such a ruling requiring that vented heaters be used in motels and felt that they had thereby solved their problem. Much to his surprise there was no change in the rate of fatalities. They are even now considering prohibiting the use of direct fired heaters of any type. They had not realized that, as was bluntly stated in an article appearing in the May, 1949 issue of *Sunset* magazine: "An improperly vented heater can be more dangerous than one that is not vented." They did not know that a vented heater needs twice as much air as an unvented heater of the same capacity. We must see that proper specifications are drawn up by a competent committee and made available to all regulatory bodies as soon as it is humanly possible.

With these specifications bearing the endorsement of the American Gas Association, they could then be submitted to the Federal Housing Administration to be included in the National Minimum Construction Requirements of FHA. This would create a national venting code for new construction overnight. Any utility could then present these venting specifications to its city authorities and says: "Here is what the FHA requires in new construction before they will insure payment of the mortgage. Shouldn't the rest of our people be protected in like manner? Let us include these rules in our plumbing and heating code or whatever classification governs and make them subject to revision as new requirements are brought to light by further research."

Drastic Action Needed

Classes could then be held to teach meter readers, service men, appliance installers, home service directors, and appliance salesmen the provisions of the code. Learning the requirements should be mandatory in these groups. Bonuses should be paid for uncovering violations. When violations are found, a complete report must be filed with the supervisor who in turn reports the case to the authority responsible for the enforcement of the regulations. In this manner the rules can be made to be retroactive. We would have FHA inspection, city inspection ,and utility inspection and policing—all on the same set of rules instead of three sets, often contradictory, as at present.

Does this sound drastic? It is intended to sound that way. It is drastic. We as an industry have permitted, nay, we have encouraged, the building up of a nuisance which now constitutes a threat to our future welfare. Drastic means must be adopted to combat the situation.

Pending such actions by FHA and others as outlined, the specifications would immediately have wide distribution throughout the gas industry for placement in the hands of governing authorities who are already taking action along such lines or considering such action.

Well, there you have it. Normally, we would have saved it for the last installment, but we are so convinced of the immediate urgency of the situation that we cannot justify even such a short delay.

What do you think of this plan? Before you start shooting it full of holes, may we ask if you have a better one? Rather, let us put it this way: Do you have a plan to serve the same purpose which can be implemented more rapidly? If you do have such a plan, please send it to us at once so we may include it in this series of articles. We promise you that it will be presented verbatim with full credit.

We need not make a mountain of this venting problem. It is like a defect which has developed in the motor in your car. The car still runs and runs well. You, however, know the trouble is there and you have the uneasy feeling that it might let you down when out on the road. You know that it won't correct itself. You know that it will get worse as time

(Continued on page 38)

Editor's Note

In this, the first of a series of four articles on the subject, Mr. Dean brings into the open once more the subject of the venting of domestic gas appliances. In spite of the impressive amount of research and study that have gone into this troublesome problem, there is no clear cut industry position on the matter. Local regulations, panicked into passage by tragic accidents, are being promulgated all over the country. In many instances they are so drawn that they defeat the very purpose for which they were intended.

Mr. Dean writes from a background of impressive experience: Ten years as a heating and air conditioning contractor in Tulsa; twelve years as heating and air conditioning engineer for Oklahoma Natural Gas Company; two years as director of education for Heating Research Cpn., and now, for the past two years, in a similar position with the Domestic Heating Division of Stewart-Warner Corporation.

Gas Companies Complete More Than Half of 1949 Financing Program

by John F. Falvey

THE nation's gas companies recently have been having marked success in raising funds needed for property expansion.

In this important respect they have been giving a somewhat better account of themselves than their brethren in the electric end of the public utility business.

After a slow start in the first three months of this year the natural gas companies have sharply accelerated their financing programs. During the June quarter they raised an estimated $226 million of new money. This approximately doubled the amount raised in the initial quarter and it brought to about $340 million the total of new financing done by this segment of the industry for the first half of the year.

Most recent projections made by the American Gas Association indicate that the entire gas industry will spend an estimated $943 million during 1949 for additions and improvements to properties. Of this sum, $809 million is expected to be accounted for by the natural gas industry and $110 million by gas manufacturing companies.

Mixed gas companies, which are largely in a state of transition to delivery of straight natural gas, have scheduled only $20 million for property outlays, and distributors of liquid petroleum gases plan to spend a mere $3 million.

On the presumption that between 25% and 30% of property expenditures will be provided from operations in the form of earnings remaining after dividend payments and accruals made to property and other reserves, the natural gas industry may not have to raise more than $540 million this year. On this basis, it already has raised all but $200 million or so of the total new money which it will have to obtain in 1949.

One of the noteworthy features of this fund raising by the natural gas companies to date in 1949 was the ability of Columbia Gas System, Inc., recently to sell 77 per cent of the $13,453,000 new common stock which it offered stockholders through rights, despite the fact that in closing days of the offering the market price of existing shares dropped below the $10 per share offering price of the new shares.

The John F. Falvey by-line is known to virtually everyone who has an interest in the financial aspects of the public utility business. The authority of his observations and comments is backed by the following business experience:

1923 to 1929—Served in an accounting capacity for Brooklyn Edison Co., in charge of general ledgers and compilation of all financial and cost statements.

1929 to 1935—With Standard & Poor's Corp., doing public utility security analysis and writing, and investment rating of all types of corporate bonds.

1935 to 1948 — with the Wall Street Journal and Dow-Jones, serving as public utility editor of the Journal for seven years. He also was a contributing writer for Barron's, a national business and financial weekly.

At present Mr. Falvey is a public utility consultant, specializing in public relations.—The Editor.

This experience of Columbia's should lay at rest fears entertained in certain financial quarters that raising of equity money is not feasible.

Manufactured gas companies have raised probably $55 million in the past six months, or better than two-thirds of the $75 to $80 million which they will need to obtain this year from investors and lending institutions. An estimated $50 million of the funds raised to date in 1949 is believed to have been accounted for by the combination electric and gas companies, such as Consolidated Edison Co. of New York, Inc., Public Service Electric & Gas Co. (New Jersey), Long Island Lighting Co., and the like.

This $50 million financing for gas department additions and extensions by the combination companies is arrived at by taking 15 per cent of the $333 million new financing which they have done as a group to date this year. This is based on the segregation of the fixed capital accounts, which aggregate 85 per cent for electricity and 15 per cent for gas and other.

In contrast with this experience of the gas companies, the electric utility industry so far in 1949 has raised no more than about 45 per cent of the $1,800 million which it is estimated it will have to finance externally for plant and equipment in 1949.

One electric company in the Midwest experienced difficulty in marketing a sizable amount of common stock to the public, and other managements in the industry are scanning the stock market with an anxious eye to ascertain whether conditions may be propitious for the extensive additional financing which they will have to do in the last half of 1949.

With much more than half of their own required financing for the year a thing of the past, and negotiated incidentally on a satisfactory price basis, the gas companies seemingly can breathe easier in this regard.

A Common Stock Financing Job Well Done

The success attained by Southern Natural Gas Co. in its recent sale of common stock through warrants to stockholders should eliminate any fears which gas industry managements may have concerning the feasibility of this type of financing.

For the 141,858 new common shares which Southern offered at $26 a share in the ratio of one share for each ten shares held of record June 6, it received subscriptions for 237,586 shares by the time the subscription books were closed on June 28.

This was a subscription rate of 167 per cent or an application for 95,728 more shares than the company had offered.

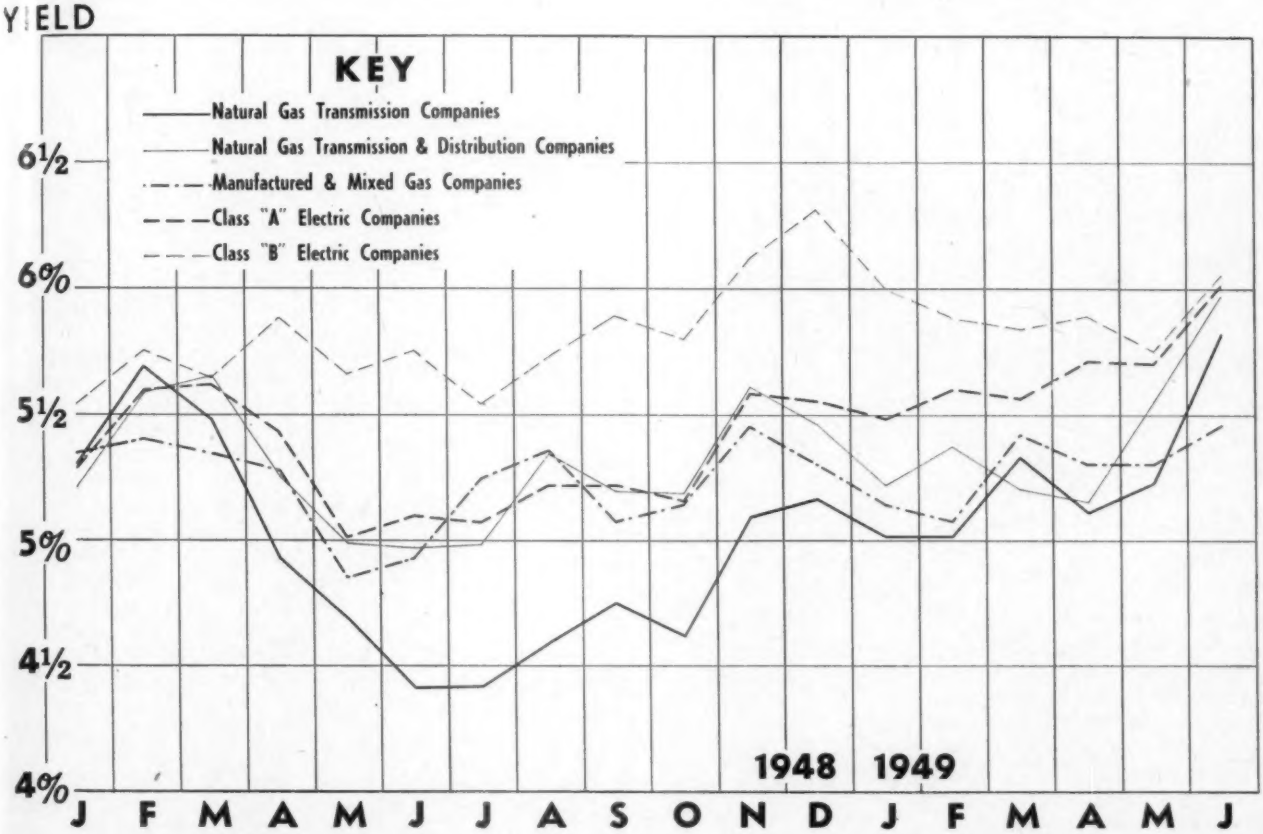
Stockholders took down under their pre-emptive right the high total of 135,877 shares, or 96 per cent of the issue.

And they sought an additional 101,709 shares under the opportunity of applying also for any additional shares not taken by other stockholders under their pre-emptive right.

Since only about 6,000 shares re-

(Continued on page 38)

Index of Yields : Selected Utilities Stocks



The companies in the various groups used in compiling this index are:

Natural Gas Transmission Companies:

El Paso Natural Gas Co.
Northern Natural Gas Co.
Panhandle Eastern Pipe Line Co.
Southern Natural Gas Co.
Tennessee Gas Transmission Co.

Natural Gas Transmission and Distribution Companies:

Columbia Gas System, Inc.
Consolidated Natural Gas Co.
Lone Star Gas Co.
Oklahoma Natural Gas Co.
Pacific Lighting Corp.

Manufactured and Mixed Gas Companies:

Bridgeport Gas Light Co.
Brooklyn Union Gas Co.
Laclede Gas Light Co.
Peoples Gas Light & Coke Co.

Class "A" Electric Companies:

Boston Edison Co.
Commonwealth Edison Co.
Houston Lighting & Power Co.
Southern California Edison Co., Ltd.

Class "B" Electric Companies:

Dayton Power & Light Co.
Hartford Electric Light Co.
Pennsylvania Power & Light Co.
Public Service Co. of Colorado
San Diego Gas & Electric Co.

Method of Compiling Index of Yields

This is a straight arithmetical index of comparative yields obtainable on a selected group of gas and electric utility industry common stocks.

The chart is to be a continuing monthly feature of AMERICAN GAS JOURNAL.

The companies comprising this index have been selected by the AMERICAN GAS JOURNAL as providing a representative cross-section of each industry, from the standpoint of geographical diversification and of the relative importance of the individual companies in their respective areas.

No effort has been made to weight the average to give effect to changes in capitalization or in dividend rates because the yields afforded on the issues reflect such changes. The index is designed to show the rate of return and not necessarily the market movements of the stocks comprising it.

Two basic reasons for use of yields instead of market prices are to show at a glance the respective attractiveness to investors of the stocks in each of the groups covered and to give gas industry managements a yardstick to guide them in their determination of what may be a favorable time to finance a part of their expansion programs through sale of equity or possibly preferred stocks.

It is divided into three gas groupings to permit comparison of any other gas company stock with the average of those in its own line of operation.

Since the yield obtainable on electric company stocks varies with their investment quality it is felt that proper comparison could be made only by classifying the electric companies in an "A" group containing some of the recognized leaders in the field, by geographical location, and a "B" group comprising sound companies not quite so strongly situated as those in the "A" class.

What Place and What Price for Gas in Our Industrial Economy?

Frederic O. Hess

by Frederic O. Hess
President, Selas Corporation of America, Philadelphia, Pa.

The atmosphere surrounding American industry currently is so heavily weighted with unusually complex considerations of costs, production, and labor relations that at least the basic industries are doggedly reviewing technologies as part of their search for solutions which have vast implications for the overall industrial economy.

The complex considerations are, in large part, traceable to the upsets that arose from the defense-and-war period. To some extent those upsets have become so much a part of the scheme of things that their cause is overlooked in conscious thought. The usual near-balance of wages, purchasing power, costs, and prices does not exist, now. The effects of the sharply off-balance situation is reflected directly in business indices. Industry can not afford to sit and wait; it is not sitting and waiting. The search for solutions covers every segment of industrial operation. New kinds of thinking are being applied. To what extent, for example, were labor unions regarded as potent economic factors in 1939? They are factors now, and are being regarded as such. How does the total budgetary allocation for all industrial research in 1949 compare with that for 1939? Double—triple? It is in that range.

The current emphasis is motivated by conditions that exist within our own industrial economy—but strategic industrial management is looking, at the same time, toward the future when our world industrial position will be a more dominant consideration. It is their well-founded, combined opinion that we cannot afford to ignore the possible and probable development of intense competition from other national economies—competition of a type that we have not had to cope with to this point. Some, maybe all, of that competition will be state-directed, which heightens its potentials of danger for us. The bright spot in this consideration is that the possibility is being viewed with an apprehension that motivates positive action. The question of time remains for wise definition. Is the future here, now?

Of course, there will not be uniform achievement in the adjustments that are sought in the new order of working. The degree of success depends upon varying forces that are within and outside of individual corporations.

There may be a surprise, for some, to read that gas is looked to by progressive industry as an increasingly important processing fuel that will implement startling changes—*changes, not just improvements*—in basic technologies. But, the view is somewhat dimmed by a haze of uncertainties. Processing in the metal, ceramic, chemical, and petroleum industries implies huge volumes—of raw material, finished product, and all that goes between the two. Heat, from whatever fuel, must be applied continuously in all those industries, if production is to be continuous. Continuity of production determines quality and economy of product, interruptions are costly to both.

That leads directly to a simply-stated question: Can the gas *industry* reach and maintain its ultimately highest position within the industrial economy?

Self Determination or Directive

Before that question can be answered, new and truly broad objective approaches will have to be made—exhaustive study will be resolved in sound judgment and coverage of conviction—followed by coordinated, rather incisive action by those concerned. The list of those concerned is not limited to the gas industry. Certainly, it includes industrial customers, labor, the Federal Power Commission, and the state commissions. Also, the producers are concerned.

This should be and can continue to be a matter for free enterprise. Or, it can become a matter that will be resolved by government directive, with consequent undesirable conditions and implications, but imposed in the highest interests of the entire nation.

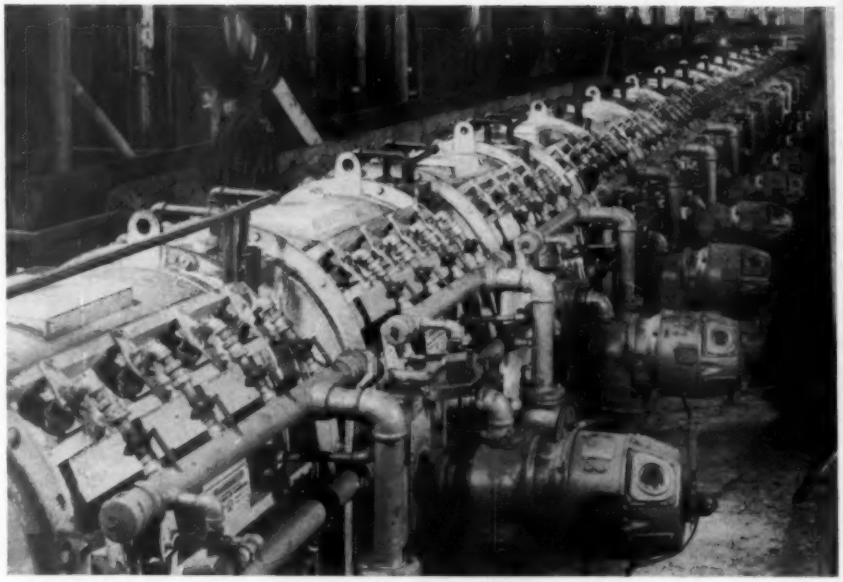
"Highest interests of the entire nation" is much more than a well-worn cliché, with respect to the position of gas in the technologies of American industry. The high-efficiency use of gas as fuel in heat processing, developed to a large degree by cooperative research of equipment manufacturers and industrial consumers, has already proved the value of gas to the extent that developments have proceeded, but the projections of future value far exceed the level already reached. It is to those levels that research is pointing now. Laboratory or pilot installations will not suffice, however. Full scale use of gas and gas equipment for processing by basic industries, with their ever-widening circles of influence on other industries, is the purpose of several currently intensive research programs.

Value of gas, as that term is used here, considers the value imparted to the processed material or product; such value is not to be confused with "cents per Mcf". Indeed, with all factors in mind, there are industrial applications of gas where quality of product, convenience, efficiency, and economy of operation, as well as compactness and cost of equipment would permit a doubling of the cents per Mcf, with substantial net economies to the gas customers. Gas has too-long been widely considered as a fuel which has, as its chief attribute, a low price and, consequently, is sold and bought as "cheap fuel" in direct comparison with "cents per gallon" and "dollars per ton." This price relationship is the result of the reversal of the prewar positions of gas, oil, and coal. Previously, the general position of gas was high-priced, with oil and coal lower. Price increases for both oil and coal progressed while there was relatively little upward change in the price of gas. It is that price factor, rather than technological advantages, that accounts for the major part of the recent increase in gas consumption. Where gas has technological advantages for industrial processing, the price, within rather broad limits, is not the deciding consideration. Evidence of this was found recently when a large industrial firm *offered* to pay the supplying utility *double* the current rate for gas, if it could

have a given volume without interruption.

It is heartening to observe indications, in some quarters, that this vast but fugitive natural resource is to be conserved for use in applications which have higher national values and can afford a more-nearly economic price.

Industry is no longer satisfied to improve existing facilities with only fractional advances in the components of the production index. Research is pointed toward basic changes which will bring about major index advances. Shown how that can be done, and convinced reasonably that it can be done, progressive and strategic industrial management is willing to make commitments of the sometimes huge investments required. That attitude exists with sufficient strength today so that it can be characterized as usual in large industrial corporations. Gas and new concepts of the use of gas are being given highly-interested attention, with a strong underlying concern for the service that will be rendered. At the same time, there is the impression that the national importance of industrial gas is great enough to warrant either a cooperative or imposed solution to the problem of adequate service.

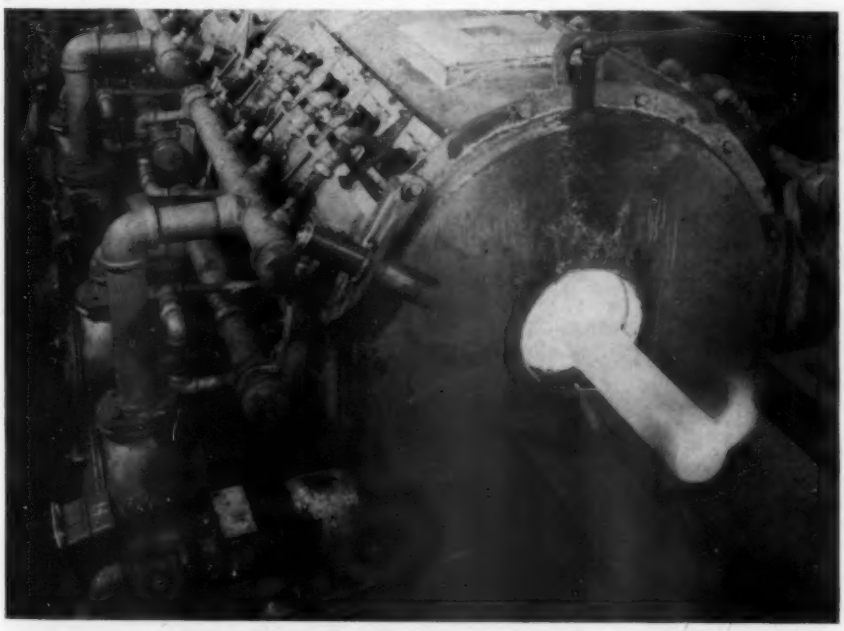


Thirteen radiant-gas furnaces in National Tube Company's automatic tube reheating line, Gary, Ind. Pierced seamless tubes are heated to 1,800°F. for final sizing, at speeds to 240 feet per minute, with production to thirty tons per hour.

Technologies Advance

The steel industry offers several striking examples of the technological value of gas in precise processing applications. While some of these are not released for publication, the radiant-gas reheating line for steel tubing installed in the National Tube Company's mill at Gary, Indiana, will suffice as an illustration.

Pierced seamless tubes are brought to uniform final sizing temperature in an automatic, straight-through, reheating line at speeds up to 240 feet per minute, with production up to thirty tons per hour, depending upon the pipe size in the range from 2 3/8-to-9¼ inches, O.D. The tubes pass through thirteen cylindrical heating units on rollers that are synchronized with the required heating time. The 1,800° F. objective for good operation at the delivery end is maintained precisely by burner adjustments that are actuated by twenty pyrometers. Electronic equipment regulates the roller speeds. Tube lengths, to 45 feet, are kept within combusion atmosphere, throughout the fast processing, for high finished quality. Between heating units, tubing is protected from exposure to air by overlapping heat-blasts from within the units.

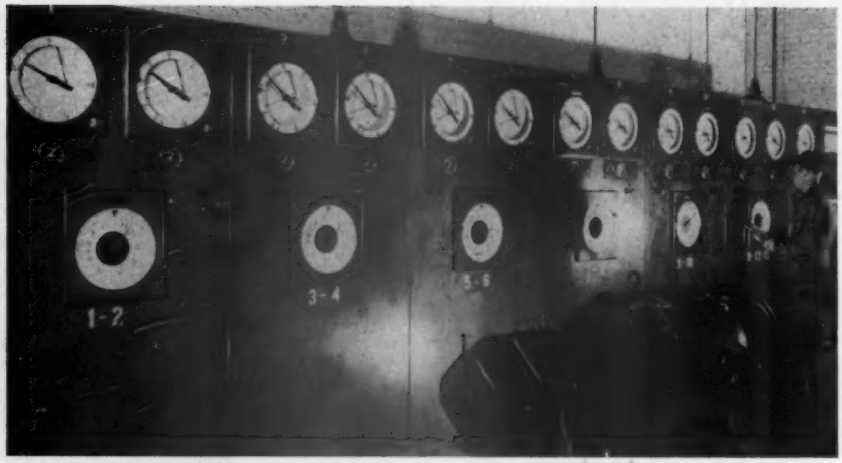


Seamless steel tube being discharged at a uniform temperature of 1,800°F., ready for final sizing operation.

In another steel industry installation of gas for processing purposes, the value of the finished product is approximately $200 per ton. Based upon the known requirement of 1,364 cubic feet per ton heated, if a price of 40c per Mcf were applied, the fuel cost for one ton of superior-quality product is 54.5c. That industrial customer never has and will not support the argument, often advanced, that industrial gas cannot be sold at a price approaching its economic value. In this case, if continuous delivery of gas were assured, the total volume purchased would be much greater than at present, and a price substantially higher than 40c per Mcf would be regarded as satisfactory, because that price would be viewed against a background of product quality, rate of production, and labor savings.

Gas is working for the steel industry in some of its more critical operations. There is much more work of that nature that can be done—research is preparing for that, now.

The ceramic industry uses gas in



View of control room where operation of tube reheating line is governed.

operations which can be done only with gas. Most exacting fluids-heating in the chemical industry depends upon gas; petroleum processing is applying gas-fired equipment for finer, more economical product.

When, with heavy handicaps, industry makes *its own* high evaluation of gas for purposes such as those suggested here and cooperates actively in the development of the means for using the gas, it seems reasonable to expect that recognition of the character of that demand, with respect to volume, price, industrial economics, and national benefits in product quality and economy, will be reflected in specific action that provides adequate service.

Adequate Industrial Gas Essential

Adequate service to industry was suggested by members of the FPC after the Natural Gas investigation.

Speaking about the "rather general regulatory concept that residential use of gas falls into a preference category and this class of service should be given priority over any and all industrial requirements for gas," Edward Falck, chief consultant on power and utilities, National Security Resources Board, said that he believes "this idea should be subjected to the most searching re-examination."

"It seems to me questionable," he continued, "whether unrestricted residential demands for space heating should be encouraged if this results in curtailment and perhaps abandonment of essential gas service for industrial use.

"We have already witnessed the harmful results of prolonged gas curtailment on industrial operations with substantial losses in jobs, payrolls and industrial output. At some point we must aim to achieve a balance between the economic values flowing from the use of gas for domestic house heating . . . and industrial production . . . Having in mind the great importance . . . for industrial purposes during wartime *it would be folly on the part of industry and the government to permit the complete preemption of all available natural gas supplies to meet residential space heating requirements.*" (italics supplied)

Whether or not we agree with all the FPC suggestions or the NSRB comments, they might well be reread for their indications of related thinking, and possibly, related planning.

A high and intense confidence in the technological values of gas for industrial purposes inspires the comment that the work that can and, hopefully, will be done in the future is of such a higher order that it should inspire many qualified young men to enter the field of gas engineering research and development. The opportunities for contribution and personal satisfaction are great; the value of those contributions will be high. At the same time, there is sufficient incentive to establish exhaustive courses of study in our many fine technological colleges and universities to train gas engineers, fuel engineers, and combustion engineers who will have broad viewpoints from which they will start their work for industry.

The combustion engineer of a large steel company commented, most frankly, in a personal conversation that he never permits himself to forget that "there's so much more that I should know to do the best possible job."

The interest in gas within the consuming industry, and the evidence already at hand, is sufficient to anticipate confidently that broad and substantial support for such academic work would be forthcoming. Eventually, the status of combustion engineering should compare favorably with electrical engineering.

The emphasis in the future development of our national economy has been placed upon process improvements to be coordinated with mass production methods, all in the effort more nearly to balance the economics of production. Our industrial economy is made up of a vast system of interrelationships of small and giant firms, working in widely diversified fields. The smaller organizations find encouragement to engage in research and development for ready markets. The flow of business is not one-way; the industrial giants look to smaller firms for parts, machinery, and refinement. That, obviously, is a healthy economic situation.

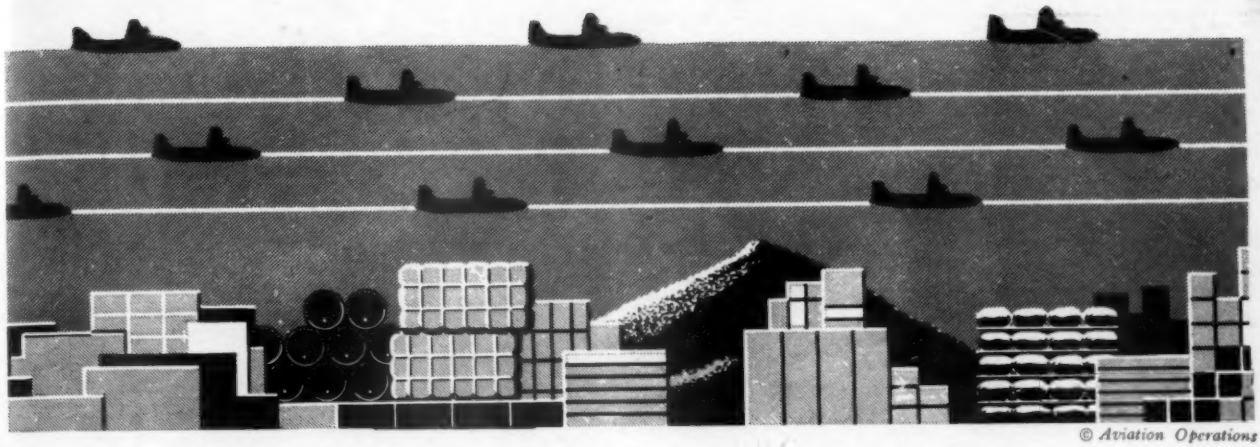
Now, as there is a stepped-up search for new and improved technologies, that coordination takes on a new importance. Huge sums of money are being spent and those investments will be best protected if a high degree of coordination can be attained. As research work points to improvements in one field with a dependence upon improvements in other fields, correlated research aimed at implementing the initial work is not just desirable, it is vital.

Gas technologies have advanced and are in practice; they will advance between the time this is written and the time it appears in type; new advances, not yet started, will start and go on into practice. But—importantly—related improvements must be made. It is to the gas industry, as that is usually understood, that the consuming industrial customers and prospects look for the means that will enable newly developed utilization equipment to work in the changing overall industrial program. They prefer not to receive the "related improvements" through the medium of a planned economy, administered in every respect by government.

Personnel Conference to be Held in Cincinnati

The fourth annual Personnel Conference of the Gas Industry under the sponsorship of the Personnel Committee of the American Gas Association, Midwest Personnel Conference, AGA Great Lakes Personnel Conference, and Southern Gas Association Personnel Section, will be held at the Netherland Plaza Hotel in Cincinnati on November 28 and 29.

Subjects to be covered are: supervisory training and executive development, salary administration, pensions and fringe benefit costs. Each of the sponsoring groups will devote an afternoon to round-table discussions on company developments.



© Aviation Operations

Propane Shipments Would Have Increased Efficiency of Berlin Airlift

by Virgil Stark

President, North American Utility & Construction Corp. and North American Petroleum Gas Corp.

THE Berlin Airlift is ended! The so-called Operation "Vittles" is no longer necessary. However, it is interesting to reveal the details of a project submitted to the Army which would have increased the efficiency of the Airlift.

The four gas plants in the Western Zone of Berlin used approximately 1000 tons of coal a day and this amount was shipped by plane. The proposed project called for the substitution of part of this coal by propane which would be mixed with the gas manufactured at the plants. It was estimated that for each ton of propane there would be a saving of approximately four tons of coal. After deduction of the tare of propane tanks, the net saving would have been approximately three tons. If only fifty tons of propane were to be used daily, the saving of weight for the Airlift would have been 150 tons a day. Since a C-54 plane carries 10 tons ,this would represent a saving of 15 flights daily, or a saving of 85,000 ton-miles a day.

The Secretary of Defense indicated in an official report a "constructive cost" of the Airlift of approximately $160 a ton. At this rate the monthly saving would have represented approximately $700,000 which would have allowed the amortization of the necessary equipment in approximately two weeks.

The Army first called a meeting in Washington. Fifteen high ranking officers and Army engineers were there to discuss the project with us. The Army inquired about the possibilities of such a project from the American Gas Association and other competent authorities. C. George Segeler of the AGA confirmed the fact that it was feasible.

The Army Department decided that the project seemed of interest and requested the writer and K. Weil of our company to make a special mission to Berlin to study local conditions.

The studies made in Berlin during the trip showed conclusively by comparison with the operational data of the gas plants that the anticipated savings in weight were correct and the project was technically feasible.

In 1940 the gas plants in Berlin, belonging to the city, supplied 93 per cent of the houses with gas. There were 1,370,000 domestic accounts consuming 17,650,000 Mcf a year for residential use. The commercial industrial and other uses amounted to approximately 8,800,000 Mcf a year. The 2600 miles of streets in Berlin were lighted 80 per cent by gas with 86,000 lamps consuming 2,120,000 Mcf a year.

The war destroyed 99.1 per cent of the distribution system, but by 1946 60 per cent had been rebuilt.

The distribution system has 4600 miles—more than the distance from New York to Berlin—and is composed of a pipe system operating at three pressures, i.e.: high, 45 psig, middle, 12"-80" w.c., and low, 2" w.c.

The gas plants remaining in Berlin are listed in the table at the top of the following page. Two damaged by war were closed (Shoneberg and Gitschiner).

Before the war there were 38 gas holders with 70,600 Mcf capacity. All except one were destroyed or damaged by bombing. To date, gas holders with an aggregate capacity of 23,600 Mcf have been repaired.

The gas plants in Mariendorf and Tegel still do not have any gas holders. Therefore, the heat content of the gas varies considerably, especially at these plants, being from 365-418 Btu per cu. ft. as compared with 515 Btu before the war. The sendout gas is now composed of approximately 48 per cent coal gas, 25 per cent producer gas, 17 per cent water gas and 10 per cent leakage gas.

The gas consumption was restricted and a formula had to be devised to allocate the available gas to each account. As it worked out, the

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Editor's Note

Everybody knows of the Berlin Airlift. It has been called "an enormous technical achievement that has revolutionized the role of aviation in transportation and logistics."

In this article Mr. Stark discusses a phase of Operation "Vittles" which is of interest to the gas industry. The fact that the Airlift has ended before the plan discussed here was put into effect in no way lessens the significance of what was studied and the value of the conclusions drawn. It was not a case of love's labor lost.

Also, there has been little in the recent news to assure that there will never be a need for the Airlift.

	Operated Since	Pre-War Daily Capacity—Mcf	Average Daily Sendout, Dec. 1948—Mcf
Western Zone			
Tegel	**1905**	**19,700**	**3,500**
Mariendorf	**1901**	**14,800**	**6,100**
Neukoln	**1903**	**9,800**	**5,900**
Charlottenburg	**1889**	**10,500**	**4,700**
Eastern Zone			
Lichtenburg	**1914**	**15,800**	
Danziger	**1873**	**14,100**	

allowed consumption was approximately half that of the prewar average, which was about 1060 cu. ft. a month for each domestic account. Such allowance was still better than that for electricity.

The operations of the gas plants in the Western Zone were so controlled that in November, 1948 no surplus coke was available for sale, and in December, 1948 the quantity available for sale represented approximately 30 per cent of the coal used. A computation showed, however, that in both cases the net coal consumption was about the same.

Further statistical data from similar gas plants in the United States, England, France, Holland, and Switzerland concerning gases of different heat content showed similar net coal consumption per 1000 calories or per therm and similar equivalents of the weight in coal for one kilogram or 2.2 pounds propane mixed with gas.

The average of the several cases in different countries shows that one ton of propane can substitute for 4.1 tons of coal, and for the Berlin plants the average is 4.345 tons of coal.

Different types and capacities of pressure tanks for shipping the liquid propane were studied to arrive at the lowest tare for the quantity shipped.

A spherical pressure tank for 200 psig working pressure, 61" diameter, was selected with a water capacity of 500 gallons and a tare of 1000 pounds. Filled 85 per cent with liquid, the weight of the product would be 1827 pounds for propane and 2000 pounds for butane. Filled with liquid, the total weight would be approximately 2800 pounds to 3000 pounds—that is 1.5 to 1.55 of the weight of the product shipped.

Considering the weight of the bags about two per cent, in which coal is shipped, the net saving in Airlift weight would be approximately three tons for each ton of propane shipped.

Several solutions were studied for the utilization of propane in the Berlin gas plants. One solution consisted of enriching the present low heat value gas of approximately 400 Btu per cu. ft. to one similar to the prewar level of 515 Btu. Assuming the same sendout in Btu, the propane consumption for such enriching would have required approximately 1000 tons a month. The propane vapor in the gas would be only 4.5 per cent of the total volume, while the gravity of the final gas would be increased from approximately 0.6 to 0.64.

By making more water and producer gas in the sets available and now idle, the heat value of the manufactured gas could be reduced to approximately 350 Btu per cu. ft., using propane to enrich the gas to 515 Btu. In this case 1500 tons of propane would be used a month. The propane would represent 6.75 per cent of the volume and the gravity would be 0.67.

Propane (2500 Btu per cu. ft.) diluted with air to 400 or 515 Btu per cu. ft. could also be mixed with the manufactured gas up to 18 per cent of the sendout volume without changing the combustion characteristics of the gas and without adjustment of appliances.

The propane consumption for this purpose would be approximately 900 tons per month.

Therefore, between propane enriching and diluted propane mixing, up to 2400 tons a month could be used in the Berlin gas plants.

Diluted propane could also be used after proper changes as a substitute for the 230 tons of coke used daily for the underfiring of the ovens. This utilization would represent up to 2700 tons of propane a month. The total use of propane would therefore be

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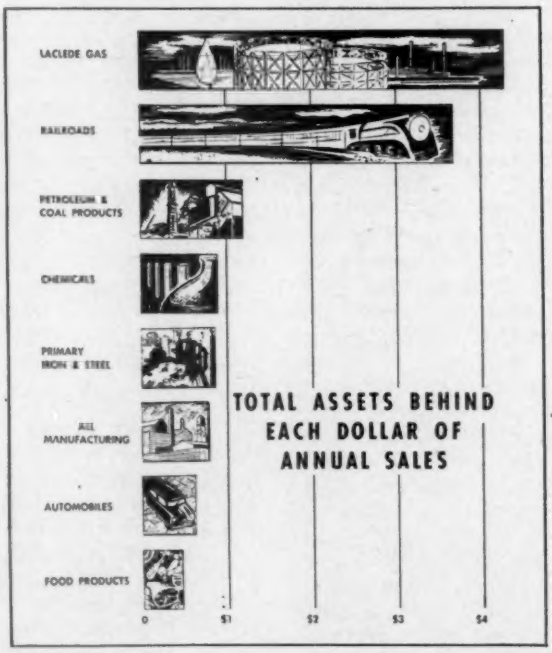
Laclede Shows Investment of $4.25 for Each $1.00 of Sales



One of the least understood aspects of public utility economics is treated graphically in the *Laclede News* employee magazine of The Laclede Gas Company, St. Louis, Mo.

In commenting on the chart, which is reproduced here, J. J. Needham, secretary and treasurer of the company, writes as follows in the *News:*

"The chart shows your company requires a higher investment for each dollar of sales than other industries. While Laclede has an investment of approximately $4.25 for each dollar of sales, railroads are less than $4 and all other industries a dollar or less."

Synthetic Fuel Processes May be Future Source of Utility Gas

by F. L. Symonds, P. W. Laughrey, L. C. Skinner, H. R. Batchelder, and E. E. Donath

THE major work on production of synthetic liquid fuels today is confined to three types of processes. The first is the retorting of oil shale, which potentially can yield large amounts of shale oil as a substitute for petroleum but which should have little or no effect on the gas industry, since any excess gas produced will be used as fuel or for the production of power.

The second is gasification of coal with steam and oxygen or air and conversion of the resulting synthesis gas to liquid products by the Fisher-Tropsch synthesis. This process produces appreciable quantities of residual gas from which can be separated a high Btu fuel gas that would be suitable as a general substitute for natural gas or a supplement to present manufactured gas production.

It is anticipated that a reasonable proportion of any future synthetic-fuel production by this process would be located close enough to centers of population so that the gas could be economically transported to the various cities.

The third process under investigation is the coal-hydrogenation process. This process also yields a residual gas that can be made available in a form suitable for general use. As in the case of the Fischer-Tropsch, it is expected that a fair proportion of these future plants would be established in areas where the gas could be used.

In both the Fischer-Tropsch and coal-hydrogenation processes, the gas required for the main process must be obtained from gasification of coal. The coal-gasification step probably can be so controlled as to produce a synthesis gas of the composition that can be used directly in the synthesis step. In the case of the coal-hydrogenation process, it will be necessary to carry out a water-gas-shift step, by which the carbon monoxide in the original gas is converted to carbon dioxide with the produtcion of more hydrogen. Some of the necessary hydrogen gas can be obtained by reforming the light hydrocarbons in the tail gas from each process and thus decrease the coal-gasification requirements. This is not essential, however, and the high-Btu fraction of this tail gas represents a potential replacement of, or supplement to, natural gas supplies.

The growth (in both natural and manufactured gas sale) over the past ten years indicates that consumption is governed primarily by availability and price and that the demand is high enough to absorb several times the volume of gas sold if it were readily available. Coupled with this fact is the probability that our natural gas reserves are not inexhaustible and that the present rate of increase of production cannot be expected to continue indefinitely. Both of these make the existence of a potential new source of gas highly important.

In the East, the problem of supplying the potential demands has been made more difficult by the limitations of the local distribution systems, which represent such a large part of the investment of a gas company. In many instances, this difficulty has been met by increasing the heating value of the gas so that the same number of cubic feet distributed supplies a greatly increased load. New supplies of gas of low heating value would not alleviate the shortage and to be most generally useful the new sources must be of high heating value comparable to that of the present natural gas.

Even if natural gas continued to be available through the forseeable future in adequate quantities, it still could be expected that the price at the well or collecting station would increase along with the demand and with the development of nonfuel uses, such as chemicals production and the like.

With the existing system of pipe lines for transmitting natural gas and the probability of a decreased supply of gas to be transmitted, it seems reasonable to assume that a fair proportion of any synthetic-fuel production will develop within a moderate distance from some of these transmission lines, particulary if the coals of West Virginia, Kentucky and Pennsylvania are used. We have, then, the possibility of producing considerable amounts of high-Btu gas at points on or adjacent to an existing natural-gas transmission system.

Some gaseous hydrocarbons are formed in all synthetic-fuel processes. They can be utilized in the process either as plant fuel or to supplement the raw coal entering the process, thus reducing the outside raw-material requirements per unit of product. It is also possible to make almost the entire output of these gaseous hydrocarbons available for use outside the plant, provided economic conditions warrant such disposition.

Coal Hydrogenation

In the coal-hydrogenation process coal is liquefied directly by reacting it with hydrogen under suitable conditions of temperature and pressure in the presence of a catalyst. The coal is first pulverized and mixed with an approximately equal weight of heavy oil from the process and a small percentage of catalyst. The paste so formed is pumped, with hydrogen, through preheaters into a series of high-pressure vessels. Pressure is maintained at 3,000 to 10,000 pounds per square inch, and temperatures are controlled at 800° to 900° F. Lighter products of the reaction are separated and hydrogenated further in a vapor-phase operation, while the heavy oils are recycled. The ash and nonliquefied portions of the coal are continuously removed from a portion of the recycle oil. Recycling of the heavy oil and vapor-phase hydrogenation of the light oils permit conversion of all the liquefied coal to gasoline and lighter products, although the process also can be operated to produce chiefly heavy fuel oil or Diesel oil. Some methane and ethane are formed, but they are used to provide part of the hydrogen for the process.

The hydrocarbon gases suitable for

Messrs. Symonds, Laughrey, Skinner and Batchelder are Chemical Engineers, working on coal to oil demonstration research with the U. S. Bureau of Mines at Louisiana, Mo.; Mr. Donath is a scientific consultant, Quartermaster Corps, Department of the Army. *Their joint paper was presented at the Production and Chemical Conference of the American Gas Association, May, 1949.*

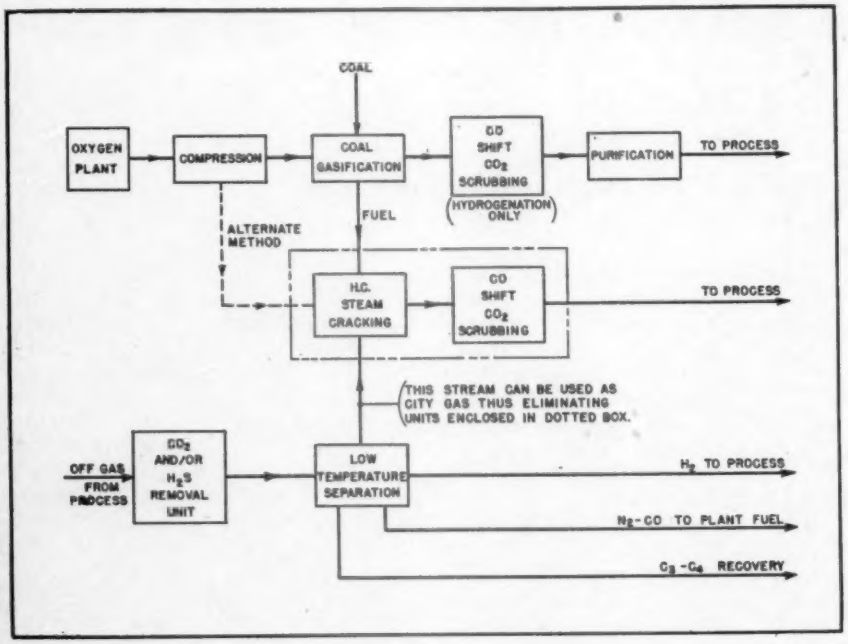


Fig. 1

city gas, produced in normal operation of a 10,000 barrel-per-day coal-hydrogenation plant manufacturing gasoline and LP-gas, will amount to about 390,000 cu. ft. per hour, with a net heating value of 1,065 Btu/per cu. ft., or 10 billion Btu per day. This gas, if not sold, would be used to produce hydrogen for the process in a hydrocarbon steam-reforming operation. Approximately 50 per cent of the total hydrogen requirements for the plant can be produced from these gases, the balance being made by direct gasification of coal or recovered from tail gases in a low-temperature separation unit. Figure I is a flow sheet of combined gas-production facilities for a synthetic-fuel plant. This flow sheet is typical for both hydrogenation and Fischer-Tropsch processes.

One way to make this hydrocarbon gas stream available for outside sale and consumption would be by eliminating the hydrocarbon steam-reforming section and increasing the size of the coal-gasification section, including all necessary auxiliaries, to such a point that it could produce an equivalent amount of hydrogen. This substitution would have the following effect: (a) Increase the investment cost of the plant, (b) increase power requirements, (c) increase coal requirements, and (d) reduce steam consumption slightly.

Evaluating the magnitude of these effects, in our current cost estimates for a 30,000-barrel-per-day coal-hydrogenation plant we find that about $14,000,000 additional investment is required, including utilities production, distribution, and all general plant facilities, for a daily production of 30 x 10^9 Btu., or roughly $500 per million Btu daily capacity. A thermal efficiency of 68 per cent is indicated, based on net heating value of the gas vs. net heating value of additional coal required. The above cost figures apply to a plant built specifically for producing city gas as a by-product. If the hydrocarbon steam-reforming section were in existence, a larger investment would be required to make the alteration.

Based on data obtained in the above calculation and using coal at $3.56 per ton, we find that the cost or actual value of this gas, without profit, is $0.44 per MM Btu, made up as follows:

Cost per MM Btu.	
Coal at $3.56 per ton	$0.22
Other direct costs (labor, maintenance, supplies)	.08
Indirect costs (overhead and indirect operating costs)	.04
Fixed costs (taxes and amortization)	.10
	$ .44

Figure 2 shows similar costs for various prices of coal.

The above table should not be taken too literally, since it does not represent actual operation of a specific unit but rather an incremental increase of the entire plant operation due to changed conditions. Amortization in 15 years, 3 per cent maintenance, and labor at $1.75 per hour were used in obtaining the above cost figures.

Conditions and properties of gas produced by hydrogenation would be about as follows:

Pressure at plant site delivery point, 350 psi.

Sulfur content below 10 grains/100 cu. ft.

Density 0.7 (Air = 1)

Composition	*Percent*
Hydrogen (H_2)	8
Methane (C_1)	57
Ethane (C_2)	28
Propane (C_3)	3
Carbon monoxide (CO)	2
Inerts	2

Gas Synthesis

In the gas-synthesis or modified Fischer-Tropsch process, the coal first is gasified to produce synthesis gas—a mixture of carbon monoxide and hydrogen. This gas is then purified and passed over a catalyst under suitable conditions of temperature and pressure. The carbon monoxide and hydrogen combine to form chiefly liquid hydrocarbons, with smaller percentages of oxygenated compounds and gases. The products vary over a wide range from solid wax to methane, the relative quantities depending on the catalyst employed and the conditions of temperature and pressure.

Preliminary calculations have indicated that there may be recovered from the residual gas of the Fischer-Tropsch process a high-Btu. gas of substantially the same composition and quantity as that recovered from the coal-hydrogenation unit per barrel of oil produced. Since the same substitution of coal-gasification capacity and the same elimination of a steam-reforming unit will be involved, it is anticipated that the value of this gas will roughly equal that recovered from coal hydrogenation.

Where special local conditions would make it desirable, it would be possible to produce a larger amount of lower-heating-value gas by eliminating the low-temperature separation unit. This would include, then, in the fuel gas to be sold outside, the unreacted hydrogen and carbon monoxide as well as the nitrogen from the first pass through the synthesis step.. From one 10,000-barrel-per-day plant, this gas would amount to about one million cu. ft per hour, with the heating value of approximately 650 Btu. This then would make available 50 per cent more fuel; but, because of its low heating value, it probably would not be suitable for long-distance pipeline transmission or even for local distribution in a good many instances. The composition of this

gas would be as indicated in the table below.

Pressure at (plant site) delivery point 350 psi	
Sulfur content	0
Density	0.67 (air = 1.0)
Composition	*Percent*
Hydrogen (H_2)	23
Methane (C_1)	28
Ethane (C_2)	15
Propane (C_3)	2
Carbon monoxide (CO)	23
Inerts	9

Let us now assume that enough time has passed so that, by virtue either of economic or security necessity, the country is producing, say, one million barrels per day of synthetic liquid fuel and that, for purposes of reckoning, 75 per cent of this hypothetical output will be produced near enough to transmission mains and population centers to make the gas useful. Considering only a high-Btu. gas and assuming that either process makes the same quantity and composition of gas, there will be available about 710 million cu. ft. per day or, roughly, 7½ million therms per day. This amount of gas is about 1½ times the 1946 consumption of the four largest cities in the country—New York, Chicago, Philadelphia and Detroit—and about 90 per cent of the total manufactured gas production of the entire United States in 1944. The Big Inch pipe line is to have an ultimate capacity of something over 900 million cu. ft. per day—not a great deal more than the production from this million barrels of synthetic fuel.

Certainly in any long-range real necessity for substitute fuels, the production of one million barrels per day is not unreasonably large, and gas production of this order of magnitude indicates the extent to which this potential industry may affect the future of our gas business.

Should the total production of synthetic liquid fuels in the country ever reach eight million barrels per day, with only three-quarters of this gas produced in areas where it can be usefully distributed, we would have available over 5½ billion cu. ft. per day. This amounts to more than 90 per cent of the total sales to consumers of manufactured and natural gas combined for the entire United States in 1944 and would certainly be a large share of the gas consumption in this future period. These preliminary figures make it evident that there will not be enough by-product gas from synthetic fuels to replace completely the present supplies of natural gas or to satisfy the demand that can reasonably be expected at the future date we are considering. On the other hand, there will be enough to provide a reliable and, at that time, probably very economical source for at least a major part of the demand.

The costs indicated are higher than those of natural gas at present; but they may be appreciably below the price natural gas will command when synthetic fuels are produced in quantity.

The foregoing figures are based on a process in which conditions are set for the most efficient and economical production of synthetic fuels. It is quite conceivable that the future situation will justify planned operations which will yield slightly smaller amounts of liquid fuels and increased quantities of high-Btu. gas.

It has been proposed in the past that process changes of this sort might be made seasonally, so that the peak of gas production came in winter and the peak of liquid fuels in the summer and fall, when they are most in demand.

Basically the production of gas is constant and proportional to the production of synthetic liquid fuels. By raising the operating temperatures, the volume of gas produced may be increased to meet seasonal demands. This would result in a decrease in oil production. Although the costs would be increased, this method might, nevertheless, be economical, because it would not require additional investment in gas production facilities.

The simplest method to meet peak loads would be to add the large amounts of LP-gas to the city gas. The same synthetic fuel plants that are capable of supplying 7½ million therms of city gas per day will have a potential LP-gas production of approximately 500 billion Btu. (5 million therms) per day. The cost of meeting the peak load in this manner, figured on a therm basis, would, however, be about double the cost of the base-load gas.

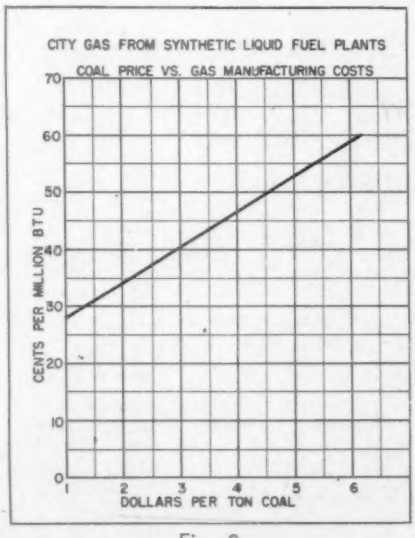


Fig. 2

The figures quoted here are necessarily preliminary. They must be verified in future by operation of semicommercial or commercial units and the relationship between liquid and gaseous fuel production must be established. They probably are of the proper order of magnitude at least, and it is believed that they are sufficient to show that the impact of a synthetic-fuels development on the gas industry will be important and far reaching and that gas-production men, in searching for potential new sources of supply, must count in their plans the gas that will be obtained from synthetic fuels.

Coke Production Off 20%, Says U. S. Bureau

Production of coke from coal-gas retorts in the United States in 1948 decreased 20 per cent from 1947 and totaled 529,374 net tons, according to reports received from producers by the Bureau of Mines, United States Department of the Interior. The manufacture of retort coke has been declining steadily in recent years because of the substitution of water gas, natural gas, or liquefied petroleum gases for coal gas.

In 1942 there were 96 coal-gas plants in operation which produced 892,552 tons of coke, while in 1948 only 36 plants reported production. Thus, in the past six years 60 coal-gas plants have discontinued operations, 1,530 retorts have been abandoned, and annual coal carbonization capacity of the industry has been lowered by 881,500 tons. Horizontal retorts, which were the predominant type of carbonizing equipment used in the early days of the coal-gas industry in the United States, have been dropping out of production at a more rapid rate than the vertical or semi-inclined type which were introduced later. At the end of 1942 there were 1,881 horizontal retorts in operation and they produced 41 per cent of the total output of retort coke, while at the end of 1948, 543 horizontal retorts were reported in operation and they accounted for only 31 per cent of the national output.

The sharp reduction in number of active coal-gas plants in 1948 naturally lowered coal requirements and the total quantity carbonized in 1949 declined 18 per cent from the 1947 figure. However, the increases in mining and transportation costs increased the cost of coal delivered to the gas utilities and the average value per ton increased 24 per cent over 1947 and was 72 per cent higher than the 1943 average. The yield of coke per ton of coal charged declined slightly in 1948 which indicated that the quality of coking coal available was possibly poorer.

Small Gas Plants Seek New Economies to Offset Increased Costs

by H. M. Kopp

General Engineer,
The Connecticut Light & Power Co.,
Waterbury, Conn.

OVER the past ten or fifteen years it has become increasingly difficult to operate a small manufacturing gas plant and maintain a competitive position as well as stay sound financially. This situation has been brought about by several factors, of which the most important are:

Increased labor rates per hour and premium rates for overtime.

Greatly increased fuel costs.

Increased cost of street openings for repairs or extensions.

Increased costs of all material for operation, maintenance and distribution.

Inability of any material increase in over-all thermal efficiency to keep pace with above increases by improvement in the art.

The demand for more and better customer service in order to maintain competitive position with other fuels.

The small gas plants as here discussed are plants supplying less than 5,000 customers and with a maximum day of less than 1,000 Mcf.

Most of the statistical information has been obtained from operators throughout New England.

According to operators of three plants serving about 2,000 customers each, over the period from 1940 to 1948:

The number of customers has increased by 32.8 per cent.

The average yearly sendout has increased by 51 per cent.

The maximum day sendout has increased by 58.3 per cent.

Average production cost per Mcf has gone from 58.7 cents in 1940 to 99.30 cents in 1948, an increase of 69.1 per cent.

Average net fuel cost per Mcf has risen from 27.73 cents in 1940 to 54.84 cents in 1948, an increase of 97.8 per cent.

Average conversion cost (operating labor plus supplies and expenses exclusive of fuel) per Mcf has increased from 18.82 cents in 1940 to 29.65 cents in 1948, an increase of 57.5 per cent.

Throughout the above period, in order to provide capacity for increased loads, replace obsolete equipment and make changes to improve efficiency and operation, the following apparatus has been installed or was on order at the end of 1948:

4—generator shells and linings changed from 4′ to 5′ O.D.	$10,000
2—generator shells and linings changed from 5′ to 6′ O.D.	6,000
3—new higher pressure blowers	8,000
Plant piping increased in size and re-routed	5,000
Changes to fuel handling, operating floors and building changes for better ventilation	10,000
4—new purifier boxes with crane and a Blaw-Knox scrubber now being erected	50,000
Aftercooler and tar separator	5,000
Miscellaneous small additions 1940-1948	7,000
Approximate capital expenditure 3 small plants 1940-1948	$101,000

The above additions and replacements were barely enough to keep the plants in good running order and carry current loads. To rebuild the three water gas plants completely would cost in the neighborhood of $650,000.

Changing the three plants to propane-air would cost about $270,000 plus a customer changeover expense of approximately $260,000. Again, this does not appear to offer a solution.

The accompanying chart of production cost curves for a typical small plant over the period from 1938 to 1948 shows that the total production cost per Mcf rose gradually from 58.7 cents in 1938 to 72.10 cents in 1945, but very abruptly from 1945 to reach almost $1.00 in 1948. The increased costs in 1940 and 1944 reflect extraordinary maintenance. It might be well to point out that one of the major difficulties with small plant operation is the small divisor for gas make to apply against large items of maintenance.

Other small gas plants in New England can be compared to the above experience. Of nine such plants, four have changed over to L P-air during this period. Taking the average of plants which have not changed to LP between 1940 and 1948:

The number of customers has increased by 25.3 per cent.

The average yearly sendout has increased by 44.9 per cent.

The maximum daily sendout has increased by 53.5 per cent.

Average production cost has increased from 65 cents per Mcf in 1940 to $1.10 per Mcf in 1948—an increase of 69.3 per cent.

Average fuel cost per Mcf 37 cents in 1940 to 67 cents in 1948, an increase of 81.3 per cent.

Average conversion cost has increased 48 per cent.

Plants changing to LP-air have found a great reduction in plant operating labor but the increase in fuel cost over the 1940-1948 period has been comparable with that in water gas plants. Many difficulties are encountered in the distribution system following a change over to LP-air. If the system is old, the leakage at joints will increase materially but can be helped to some extent by anti-leak treatment. Certain appliances are sure to give trouble for a considerable period after being adjusted for the new gas.

New England plants are doing a very good job of operating in spite of the handicaps of high labor and fuel costs. Many are faced with the problem of replacing obsolete and worn out equipment, however.

Some suggestions can be made for overcoming operating problems

Condensed from a paper presented before the Production and Chemical Conference of the American Gas Association, May, 1949.

where natural gas can be expected within five years:

The sales program and rates for house heating should be such that the peak day will not be built up.

Generator shells can usually be increased in size about 1 ft. without undue cost.

Higher pressure blowers can be installed.

Bottlenecks in set piping and take-off mains to condensers can be removed.

Purifier boxes are often under capacity and costs of purification are excessive. It may be possible to introduce anhydrous ammonia to increase life of oxide in boxes and reduce cost of purification. However, due to high labor costs, it may often prove advisable to completely foul each batch of oxide with the first use and not try to revivify it.

Undersized tar separators may have their operation improved by use of wetting agents. Also it may be possible to add a small screen and shaving filter over the outlet pipe which can be readily changed.

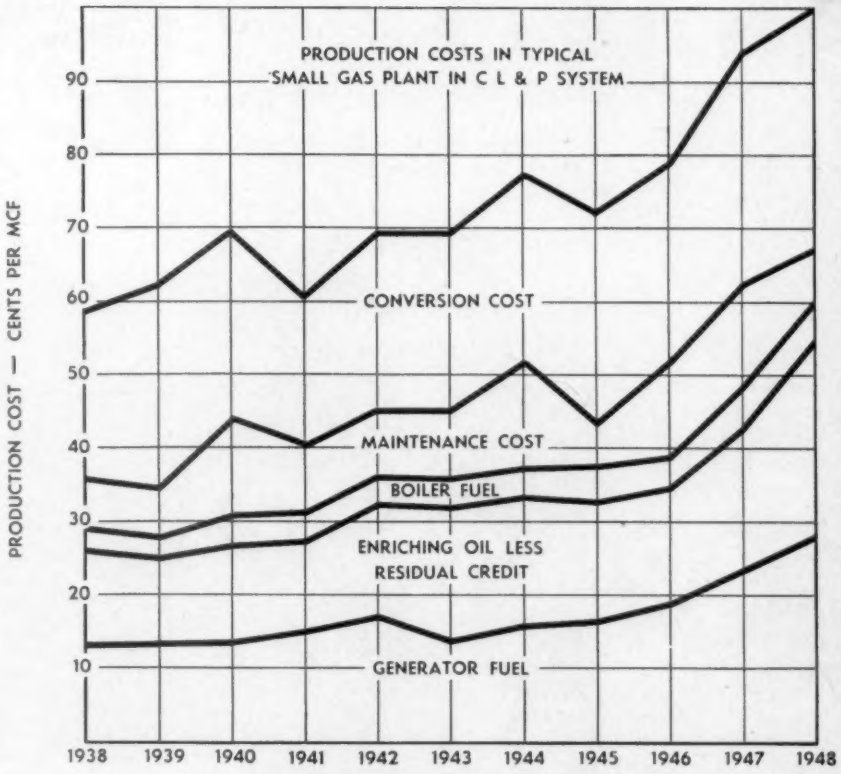
Water gas tar may be burned over a coal fire under boilers.

Some capacity increase may be obtained by going to shorter cycles.

When limit of set capacities is reached, install one or more propane tanks and use this LP-gas for reforming and cold enriching. Such installations at a cost of from $10,000 to $25,000 should enable the operator to increase set output by 20 to 30 per cent.

If a small plant is faced with shortage of holder capacity, it may install high pressure storage and small automatically operated compressors for filling. It might prove economical to install high pressure storage and abandon the low pressure holders to save heating and maintenance costs.

In time the new catalytic cracking plants may be developed to a point and reduced in cost so that they can be applied to small gas properties. But more experimental work needs to be done.



The Advent of Natural Gas

In the Northeastern States and New England natural gas would be the salvation of many small gas properties if it could be delivered economically to their systems. This gas would have to be distributed undiluted and not used as an enriching agent as would be possible in large plants. The cost of maintaining any kind of standby plant in a small situation might take away all of the savings expected from natural gas. In connected systems serving several territories, the large plants, with standby equipment, would have to release some of their natural gas to the smaller distributing systems during peak periods and emergencies.

Many small gas companies are going to be disappointed in a supply of natural gas for many years to come. At present costs in most of the New England area a 6" high pressure steel pipe will average about $20,000 per mile. Assuming that the small plant is 20 miles from the main line with only scattered territory along the route and no large cities beyond, then the investment for a line would be $400,000 or about $50,000 per year carrying charges. With a present send-out of 100,000 Mcf 530 Btu gas and assuming natural gas loads can be increased to 100,000 Mcf of 1,000 Btu, the carrying charges alone would be 50c per Mcf. Adding the cost in New England of approximately the same amount for the gas, this becomes $1.00 per Mcf. This gas cost plus an estimated $15.00 per customer for appliance changeover expense is not attractive.

It is not possible to tie many of the small companies with the natural gas lines on a sound financial basis in New England, 1,500 miles from the source of supply.

Summary

In those situations where LP-air plants have already been substituted, economical operation is tied closely with the price of propane or butane which is a premium fuel. Plants which have recently converted to LP-air may find that they cannot afford the investment and plant write-off necessary for a long connecting line to the natural gas main transmission system and absorb the charge for appliance changes at least until a few years have elapsed.

Much progress is being made experimentally with various catalytic cracking processes and high Btu operation. These operations should be watched carefully for possible development of a low priced unit which will make gas which can be substituted for the gas presently being distributed without a large investment for appliance changeover and which will employ relatively low-priced fuels as feed stock.

F P C Action Taken on Two Projects

The Federal Power Commission has authorized Mountain Fuel Supply So., Salt Lake City, Utah, to construct a $1,750,000 pipe line project to increase the company's natural gas deliveries by approximately 23,600,000 cu. ft. a day.

Central Kentucky Natural Gas Co., Charleston, West Virginia, has received FPC authorization to construct additional natural gas facilities to increase the company's deliveries in the northeastern Kentucky and Cincinnati areas. Estimated cost is $1,643,000.

My Ideas on Reducing Accidents in a Gas Company

By Mary M. Barr

Distribution Department, The Brooklyn Union Gas Co., Brooklyn, N. Y.

NOT every day will afford me an opportunity to avert a train wreck—a dozen times, perhaps a hundred times a day, however, I can safeguard my associates and myself by the application of simple safety principles that may go unrecognized but which nevertheless are important.

Miss Barr's article won the grand prize in a safety essay contest recently held by The Brooklyn Union Gas Co. Here she is shown as Clifford E. Paige, President of the company, gave her the cash award.

Definition

The best way to prevent an accident is to know the meaning of the word "accident." According to the dictionary, an accident is "an event that takes place without one's foresight or expectation, especially one of an unfortunate character; a casualty." As prevention is far better than care after the damage is done, it should be my concern to recognize conditions and practices that may cause an accident and to take proper action upon meeting them.

Although I believe that industrial accidents are on the downward trend, particularly in The Brooklyn Union Gas Company where emphasis is placed on safety and safety education, accidents occur in spite of all precautions. However, if I try to remember that accidents do not just happen but are caused, I will be doing my part to reduce the number of industrial accidents even more.

I Promise

I know if someone were to put a list of accident "do's" and "don'ts" in front of me, I would become quite bored after reading the first few, but if that same person were to produce a list of "promises" I would immediately take an interest. Therefore:

1. I promise to keep my hand on the railing when walking downstairs and to be less impatient. Less speed makes a safe landing.

2. I promise to be careful about discarding broken glass and burned-out fluorescent bulbs. The insides of these bulbs are coated with beryllium, which is very harmful if it enters a cut or is inhaled. If I am accidentally cut by a fluorescent bulb, I will secure first aid immediately.

3. I promise to be careful in lifting heavy objects. I will crouch to the object, get a good grip on it and lift it by straightening my legs.

4. I promise to put things away when finished with them and to pile them so they don't slip or fall and thereby eliminate hazards for my fellow-employees.

5. I promise to leave aisles and exits clear. Anything that is not moving does not belong in either.

6. I promise to do my part to keep spilled oil and other slipping hazards off floors and stairs.

7. I promise to report "out of order" conditions to the proper authorities and not try to tamper or allow others to tamper with frayed electric wires, telephone cords and so forth.

8. I promise not to carry sharp instruments such as scissors and letter openers around in my pockets or hands.

9. I promise to wear the right clothing on my job. Long sleeves and jewelry may easily become caught in a moving machine or on a nail or door knob and throw me. I will wear protective gloves around sharp materials and keep my feet protected around heavy materials.

10. I promise to avoid "horseplay" in the office. What may appear as a joke to one may result in a serious accident to another.

11. I promise to watch for fire, to know where an extinguisher is and to know how to use it.

12. I promise to report all wounds immediately. A scratch may lead to an amputation.

So Help Me! ! !

Awards Pipe Line Contract

Carthage Hydrocol, Inc., has awarded the contract for construction of its sixty-three-mile gas pipe line from gas fields in San Salvador to the plant at Brownsville, Tex., to H. B. Zachry Co., of San Antonio, Tex. The line will cost an estimated $1,800,000.

AGA Names Hotels Where Sections Will Meet During Convention in October

The American Gas Association General Convention Committee under the chairmanship of George F. Mitchell, president, The Peoples Gas Light & Coke Co., Chicago, has selected "Gas Has Got It" as the theme for the annual convention in Chicago, October 17-20.

Attendance is estimated at about 6,000. Although accommodation commitments made by the Palmer House, Morrison Hotel and Sherman Hotel are believed to be adequate, members of the Association are urged to make reservations at an early date, and are requested to select as their first choice the headquarters hotel of the Section with which they are most closely allied.

The accounting Section will use the Palmer House as its headquarters.

Convention activities of the Industrial and Commercial Gas Section will be at the Hotel Sherman.

The AGA Insurance Committee will conduct a conference at the Hotel Sherman.

The Residential Gas Section will meet in the Sherman Hotel.

The Home Service Breakfast will be in the Red Lacquer Room, Palmer House, and the Home Service Round Table will be held in the Sherman Hotel.

The headquarters of the Technical Section will be at the Morrison Hotel.

The general convention plans call for meetings of the Natural Gas Department on Monday morning, October 17, and of the Manufactured Gas Department on Monday afternoon, both meetings to be held at the Palmer House.

When State Can Tax Interstate Commerce

(Recent Court Decisions Affecting Gas Utilities)

by Leo T. Parker

Attorney at Law
Cincinnati, Ohio

RECENTLY a reader asked the question: "What rules will a court rely on when deciding whether a state may tax a gas company which transports gas from outside the state to consumers within the state?"

Apparently this is a simple question, but actually many legal complications are presented in its answer.

For many years the states have sought *by taxation* to collect from the instrumentalities of commerce compensation for the protection and advantages rendered to commerce by state governments. The federal courts have during this period endeavored to determine the scope of a state's power to tax in the light of the competing interests of interstate commerce, and of the states, with their power to impose reasonable taxes upon incidents connected with that commerce. The disagreements still go on although in this article I shall show that many important points of law on commerce have been clarified by the Supreme Court of the United States.

According to a recent higher court decision a state may *not* legally tax gas corporations a privilege tax on the corporation's gross receipts for gas delivered into the state and sold to consumers therein, if the testimony shows that the transactions relate to interstate commerce.

For example, in Gay v. United Gas Pipe Line Company, 32 So. (2d) 600, the United Gas Pipe Line Company sued the Comptroller of the State of Florida for a restraining order and permanent injunction against collection of a gross earnings tax on gas transported through the gas company's pipe lines from Texas to Florida, where it was delivered to purchasers and consumers. The testimony showed that the gas company entered into contracts with the purchasers and consumers in Florida for sale of the gas. Then it transported the gas through its main pipe lines *in continuous* and *uninterrupted* streams from points in Mississippi and Louisiana through the State of Alabama into Florida. There was no reduction of pressure on the pipe lines up to the delivery point to the consumers where it was metered and the pressure, *for the purpose of metering,* was reduced for the *first* time.

The higher court held that the State of Florida could not compel the gas company to pay a tax to this state. This court said:

"The testimony shows that the gas was transported under pressure through pipe lines of the appellee from Louisiana through Mississippi and Alabama into appellee's (gas company's) stations in Escambia County, Florida. For the purpose of delivery to the purchasers the pressure thereon was reduced for the first time and the gas metered."

Hence, in this case the court decided that the gas company need not pay the State of Florida a privilege tax on its gross earnings, because, first, the gas was sold before starting on its journey from Texas to Florida; second, the gas was transported without stoppage or interruption from Texas to the consumers' meters in Florida; and, third, the pressure on the gas was not reduced until ready for delivery through meters to the consumers in Florida.

Also, see United States Supreme Court cases on different phases of the law on interstate commerce sale of gas, as follows: Illinois Natural Gas Company v. Public Service Company, 314 U. S. 498; State Tax Commission v. Interstate Natural Gas Company, 284 U. S. 41; Ozark Pipe Line Corp. v. Monier, 266 U. S. 555; Missouri v. Kansas Gas Company, 265 U. S. 298; and Interstate Natural Gas Company v. Federal Power Commission, 67 S.Ct. 1482.

These courts held that transactions are intrastate and not interstate whereby a state *may* tax gas delivered into the state, *if* the testimony shows these facts: (1) That the contract between the gas company and consumer is *not* a contract for the sale of natural gas but an agreement to sell; (2) or the agreement is to sell and deliver gas for resale; (3) or a sale is not consummated until delivered in the state; (4) or an obligation to pay for the gas does not arise until consumed at the burner tips; (5) or the gas is not purchased under the contract until it has been consumed; (6) or no obligation to pay exists until the gas has been consumed; (7) or the sale is completed in the state; (8) or the contract of sale is not completed until the gas is delivered to customers in the state; or the flow of gas is interrupted and pressure reduced at different points during transportation of the gas from one state into the state wherein the consumers are located.

It is true, of course, that transactions are intrastate, and subject to taxation, if gas is transported into a state and held there until it is sold. On the other hand, the Supreme Court of the United States has held that *if* the contracts by which gas or other merchandise is definitely sold, the gas or other merchandise may be transported into a state and held at a common point awaiting delivery on the previously made contracts without changing the character of the transactions from interstate to intrastate. See Peoples, 270 U. S. 550.

Excise Tax Different

Recently the Supreme Court of the United States laid down this rule of law: If the events giving rise to a tax are no more essential to the interstate commerce than ad valorem taxes, such a tax law is valid. In other words, a state may pass a *valid* law taxing a foreign gas corporation which transports and sells gas in the state *if* the amount received from the tax is used for the protection the state gives or affords the activities of the corporation within its borders.

For example, in Memphis Natural Gas Company v. Stone, 68 S. Ct. 1475, the testimony showed facts, as follows: The State of Mississippi has a law which imposes a "franchise or excise tax" upon all corporations "doing business" within the state. The law defines "doing business" to include each and every act, power or privilege of the corporation exercised or enjoyed in this state.

The imposed tax was $1.50 for each $1,000.00 of the corporation's capital used, invested or employed within the state.

The counsel for the State of Mississippi argued that its tax law is valid and enforceable because it is a tax on the *privilege* of engaging in the doing of interstate business within the state, and such a tax is not invalid under the Commerce Clause of the United States Constitution. Also, it was argued that the state tax did *not* bear *directly* upon interstate com-

merce and that any burden imposed upon that commerce was remote and unsubstantial. And again it was argued that no attempt was made to tax *interstate* commerce as such, but the levy is an exaction which the state requires as a recompense for its protection of activities carried on in the state in maintaining, keeping in repair, and otherwise in manning the facilities of the system throughout the many miles of its gas lines in the state.

The Supreme Court of the United States agreed that the state tax was valid, and said.

"The power to levy such a new tax is not and could not be questioned except as an interference with commerce. . . . The facts of this case present again the perennial problem of the validity of a state tax for the privilege of carrying on, within a state, certain activities admittedly necessary to maintain or operate the interstate business of the taxpayer. . . . The Mississippi tax under consideration is not discriminatory. It is levied, in addition to ad valorem taxes, on corporations created under Mississippi laws, those admitted to do business in Mississippi and those operating in the state without any authority from the state. . . . This is a tax on activities for which the state, not the United States, gives protection and the state is entitled to compensation when its tax cannot be said to be an unreasonable burden or a toll on the interstate business. . . . The Gas Company's property is in the taxing state where the taxable incidents occurred. . . Nor is the measure used to calculate the amount of the tax challenged. That measure is $1.50 on each thousand dollars of capital employed within Mississippi."

Brief Review

In order that readers shall have at hand comparisons, with higher court citations in verification, as to distinctions the courts make between valid state's taxation affecting interstate commerce, we shall briefly review several leading dicisions, as follows: A state tax on the sale of gas after it has been transported into the state is valid; Berwind White Company, 309 U. S. 33. A tax on the production of electricity for interstate commerce is valid; Utah Power & L. Company v. Pfost, 286 U. S. 165. A privilege tax on the operation of machines for the production of electricity to drive gas in interstate commerce is valid; Coverdale v. Arkansas-Louisiana Pipe Line Company, 303 U. S. 604. A use tax on merchandise shipped interstate for immediate incorporation into an interstate transportation system is valid; Southern Pacific Company v. Gallagher, 306 U. S. 167. Also, a franchise tax is valid on a foreign corporation authorized to do business and which makes sales in the state; Beauchamp, 308 U. S. 331. A privilege tax on a foreign gas corporation is valid where the corporation is doing business in the state upon a proportion of property in the taxing state that was computed by using interstate commerce as an element; Hump Hairpin Company v. Emmerson, 258 U. S. 290. An excise tax is valid when levied on intrastate manufacturing, added to an ad valorem tax and measured by sales of a corporation; American Company v. St. Louis, 250 U. S. 459. A license tax is valid for storing goods or gas *at rest* in the state under a transit privilege; Independent Warehouses, Inc. v. Scheele, 331 U.S. 70.

And again valid regulations may be imposed by a state on mixed commerce. See Panhandle Eastern Pipe Line Company v. Public Service Comm'n, 332 U.S. 507. When state taxation of activities or property within a state is involved, different considerations control. It is no longer a question of actual interruption of the operation of commerce. See Kelly v. Washington, 302 U.S. 1, 14. A state law is valid which requires a foreign corporation to pay a fee for the privilege of using state courts. See Union Brokerage Company v. Jensen, 322 U.S. 202. Likewise a special privilege tax upon an interstate transportation company for the use of the state roads has been held valid. See Aero Mayflower Transit Company v. Board of Railroad Comm'rs, 332 U.S. 495.

Also, the Supreme Court of the United States held that when a gas corporation carries on a local activity sufficiently separate from the interstate commerce, state taxes may be valid even though the exaction from the business of the taxpayer is precisely the same as though the tax had been levied upon the interstate business itself. See Western v. Bureau, 303 U.S. 250.

Not Taxable

Here are a few privileges of gas and other corporations a state *cannot* tax: A foreign gas corporation which seeks *no privilege* from a state such as the power of eminent domain, the right to use public ways or beds of streams cannot be denied the right to enter a state, remain there and operate a purely interstate business without taxation. See Crutcher v. Kentucky, 141 U.S. 47, 56; and International Company v. Pigg, 217 U.S. 91. And see Stanolind Pipe Line Company, 249 N.W. 366. This court held that all state taxes upon a gas corporation doing only an interstate business are invalid when levied (1) upon the privilege of doing interstate business within the state; or (2) upon some activity which is so much a part of interstate business as to be *in effect* a tax upon the interstate business itself. Also, see Ozark Pipe Line Corp. v. Monier, 266 U.S. 555. Here the Ozark Pipe Line Corporation operated a pipe line from Oklahoma through Missouri to a point in Illinois. The product was not delivered or sold to consumers in Missouri. The court held that the State of Missouri could not tax the corporation as with respect to this state its business was purely interstate.

And, also, see State Tax Commission v. Interstate Natural Gas Company, 284 U.S. 41. Here a pipe line ran from Louisiana through Mississippi and back to Louisiana. Two local Mississippi distributors took gas in that state from the gas corporation. Mississippi sought to tax the corporation under a privilege tax law that required the pipe line company to get a license to exercise the privilege to operate an interstate pipe line.

The court held that the entire business of the corporation was interstate despite a claimed local activity by the reduction of pressure to deliver gas to the Mississippi distributors. The court held that the state license for the privilege of engaging in the business of operating a pipe line was *an invalid* burden under the Commerce Clause.

And, see Cheney Brothers Company v. Massachusetts, 246 U.S. 147. Here a state passed a law designed to compel foreign corporations to pay an excise tax for the privilege of doing business in the state of an unapportioned percentage of its authorized capital stock. The law was invalidated as being wholly on interstate commerce although the corporation maintained a selling office with one office salesman and four other salesmen in the state.

For comparison, see Court, 266 U.S. at page 565. Here it was shown that a corporation maintained an office in the state for the purchase of supplies, employment of labor, maintenance and operation of its lines and automobiles, and other acts within the state. However, *all* of these activities were *exclusively* in furtherance of its interstate business, and the corporation's property iself, although extensive, was likewise devoted only to interstate commerce. The court held that the state could *not* tax the corporation.

And finally a late higher court laid down this rule: "Does the tax amount to enough to have a substantial effect to block or impede the free flow of commerce?" If so the law is void.

Con-Edison Gives 'Curbside' Cashier Service in Outlying Districts

A MOBILE cashier unit for the convenience of consumers in outlying communities is the latest addition to the vehicular fleet of the Consolidated Edison Company of New York, Inc. It is being used exclusively in New York City's borough of Queens, where Consolidated Edison provides gas and electric service.

The unit, put into service on July 1, stops once a month at specified locations in twenty-one different Queens communities. Nineteen of these are full-day stops, from 9:30 a.m. to 4:00 p.m.; the other two are half-day stops.

Locations were selected specifically to include those communities that are furthest away from any district offices, and from which transportation to district offices is least satisfactory. Residents in these communities can save time and expense by paying their bills regularly at the mobile cashier.

Upon its inauguration, the new service was brought to the public's attention through circulars distributed with consumers' bills, local newspaper advertisements and newspaper releases.

This is solely a service for housewives, the hours selected indicating that no attempt is made to serve those customers who are commuters.

Large display advertisements in the community weekly newspapers told the customers about this new "curbside" cashier's office. Since most of these weekly papers serve distinct communities, the company was able to tell "where and when" the unit would be in each section.

The first appearance of the unit was at Rego Park on July 1, and the company reports that a total of more than 200 persons paid their bills at the truck that day. This figure was not considered representative, however, as the advertising and publicity in connection with the new service had barely been started.

Exterior view of Consolidated Edison's new mobile cashier unit. Residents in communities remote from the company's district offices will be able to save time and expense by paying their utility bills at the mobile cashier. In actual use, the cashier windows, exposed by raised panel, will be opened only on the side that faces the sidewalk. On street side the panel will remain lowered.

Interior view of the new mobile cashier

Commercial Relations Department personnel operate the mobile cashier, which is staffed at all times by a minimum of two clerks. One acts as driver of the truck. Continuous year-around service is contemplated except for possible limitations during the winter if heavy snows should hinder curb-side parking.

Adequate protective measures have been taken by the company against hold-up.

The mobile cashier has a standard Chevrolet forward control chassis equipped with a Grumman aluminum alloy Kurb-Side body. Interior office space, located to the rear of the driver's seat, provides an area 128" long, 78" wide and 70" high.

The exterior of the truck is attractively colored red and white with grey paneling. It has two cashier-type windows on each side so that it can operate on either side of the street. When it pulls to the curb at any of the designated locations, the two cashiers on duty take their places at the windows facing the sidewalk and are ready for business.

A wide aluminum panel, faced with a promotional poster, obscures the windows on each side while the unit is in transit. When it is on location, the windows facing the sidewalk are exposed by raising this panel, which then provides an awning effect over the windows. Dates on which the unit will return to a location for the next two months are included in the receipt stamp imprint which leaves a picture outline of the truck on each bill stub when payment is made.

Interior facilities were designed to meet all contingencies, the company says. Counter-desks extend the full length of each side wall, with seating space at each window, and include the necessary storage space and cash drawers to meet the requirements of each cashier at his pay window. Three movable stools can be used wherever needed.

Ventilation is supplied by two fans and there is a compact heating unit ready for use during cold weather periods. The roof and both sides are fully insulated and the smooth plate floor is covered with linoleum.

Standard cashier's working equipment is provided. This consists of a safe, two coin change machines, two adding machines and a portable typewriter.

Economics of Propane for Peak Shaving

by A. B. Lauderbaugh

Chief Gas Engineer
Manufacturers Light and Heat Co.
Pittsburgh, Pa.

THE USE of Liquefied Petroleum Gas as a standby fuel, or to meet winter time peak loads, is no longer in the experimental stage.

The general physical properties of propane are known and it is accepted as a fact that propane-air can be made interchangeable with either natural or manufactured gas.

Almost without exception, the gas companies of the Appalachian area or, for that matter, of the entire country, have within the last four years come face to face with an unprecedented winter peak load problem. Much of this problem is undoubtedly due to the fact that because the rate structures of gas companies are subject to regulation, they have not advanced with the prices of competitive fuels; consequently gas is sometimes a cheaper fuel than oil, anthracite coal or even bituminous coal. The net result is that the gas companies have a much greater winter time domestic load than ever before, and system load factors have declined. Winter time loads have always varied with the weather, but never before were the variations so severe. In the Appalachian area, depletion of local fields further complicates the problem by requiring that more and more gas be obtained through long-distance pipe lines. If we stop to think that 100 million cubic feet of natural gas weighs 2,500 tons; that to be of use in Pittsburgh, it must be pumped about 1,500 miles from the gas fields of the Southwest; that at best, we would have only about three days reliable advance weather warning in which to complete the three and three-quarter million ton miles of transportation required to get that 100 million cubic feet where we want it, we can better understand the physical improbability of meeting the peak problem wtih long line facilities.

Entirely separate from the physical problem of meeting this peak load with pipe line gas is the economic side of the consideration. Most pipe line gas is now sold at a demand-commodity rate. Such rates put a severe economic penalty on purchases at even a .75 load factor, and are prohibitive at the factors now developed by the domestic heating load.

The delivery into a system of bulk volumes of gas for winter time use is not the only factor in solving this peak load problem. In the past, many natural gas companies have had a few communities with a high saturation of gas heating, but never before have so many communities wanted so much gas for house heating. The problem has become one of placement as well as procurement. Distribution systems, intermediate pressure systems, and the interconnecting transmission networks are, in many cases, extended to their limit of capacity.

Calling attention to its high cost usually stops any tendency to try to use propane-air gas as "firm gas." In the Pittsburgh area, for example, the raw material required to make propane-air gas as a replacement for one MCF of natural gas will currently cost about $1.10. If the domestic rate for natural gas is fifty cents per MCF, there is never any strong incentive to make large quantities of propane-air gas at a total cost of at least $1.40 and sell it for thirty-five percent of what it cost to make it.

Just how much of the peak load of any company can be furnished by propane-air will be a function of the physical structure of the property, the individual load characteristics of the company, and the purchase and sales rates for gas. During a normal winter in the Appalachian area there will be an average of fifteen days when the total domestic demand for gas will be within 10% of the demand on the max day. It is on these ten to twenty days that peak shaving with propane-air can be used to best advantage. It is a generally accepted opinion that most natural gas companies cannot afford to make more than 2% of their total annual sales in propane-air gas. There are, of course, notable exceptions to this general statement and every contemplated installation must be given individual consideration; but for most companies, 2% will still be the top limiting figure.

Location of Plants

Since propane-air is expensive and should not be used with a lavish hand, let us now consider some of its advantages for use in reasonable quantities. First of all, it is interchangeable with natural or manufactured gas in any proportion, including 100% substitution. It can be sent out at any pressure up to about 125 Psig. during 100% replacement, and up to 350 Psig. if it is mixed about 50-50 with natural gas. Therefore, the plant or plants can be placed almost anywhere in the system and be designed to match the pressure on the line at that location.

A propane-air plant can be placed close to the point of demand and thereby help to solve the ton-mile transportation problem on the peak days when pipe line facilities may be extended to their limit. Unlike some other types of peak shaving plants, a propane-air plant can be started up and shut down quickly, making it ideal for use on the peak hours of a number of days during the winter season. If it is electrically operated, it can actually be made to operate on push button control. Whether electric or gas engine driven compressors are used, a five or even a seven million a day plant can be operated with one man per shift. Its ratio of effective output volume to storage volume is about 700 to 1, that is to say, that for every cubic foot of liquid in storage, there will be more than 500 cubic feet of plant output gas, and this output gas will replace or be equivalent to 700 cubic feet of 1100 Btu natural gas.

Capacity

Propane-air plants can be constructed to have almost any desired maximum send out capacity, from less than half a million a day to more than fifty million a day. Even more important is the fact that regardless of the maximum rate of the plant, it can be designed to have a satisfactory, stepless turn-down of at least ten to one. In other words, a plant designed to have a maximum operating rate of, say, five million cubic feet per day can be operated to send out any volume between five million per day and a half million per day.

Quite naturally, the next questions are about sizing and cost and, frankly, they are difficult to answer. Obviously, the maximum capacity of the plant will be controlled by the amount it is desired to "shave" the peak day, and the amount of storage at the plant, by the probable number of

(Continued on page 44)

Presented at Spring Meeting Natural Gas Department, American Gas Association, French Lick, Indiana, May 9-10, 1949.

News of the Gas Industry

Natural Gas Comes to New York City on Aug. 1; Texas Eastern Serves Staten Island Company

Natural gas will be introduced into the New York city area for the first time on August 1, when Texas Eastern Transmission Corporation starts delivery to the New York and Richmond Gas Company, local utility serving Staten Island, according to an announcement released by the New York Public Service Commission recently.

The 38,000 gas consumers on Staten Island, who have been using manufactured gas, will all be on straight natural gas by November first, under change over plans that are scheduled to get under way during the month of July. To finance the cost of this accelerated conversion program, the PSC has authorized the local gas company to issue $750,900 of serial notes to mature in 1957. The changeover, as planned, will divide the company's consumer territory into 26 districts. Crews large enough to changeover all appliances in an average of three days per district will be employed. Conversions and Surveys, Inc., has been awarded the contract for the job at a reported cost of approximately $500,000.

For the information and convenience of its customers, the New York and Richmond company will mail letters to all customers, explaining to each when the changeover will be made in his area, and advising what steps will be necessary to complete the job with a minimum of service disruption.

Present Plant To Be Converted

Texas Eastern has contracted to furnish the Staten Island utility with up to four million cu. ft. of natural gas a day, over a twenty year period. Local officials anticipate that this delivery will take care of all customer requirements for some time to come. But to guard against emergencies, the present manufactured gas plant with its maximum day's sendout capacity of about six million cu. ft. of 542 Btu gas will be converted to the making of 1,000 Btu oil gas. The company's own engineering and plant force will make the conversion, and for the present little new equipment will be required to effect the transformation.

The company has filed a proposed new schedule of rates with the PSC, which it anticipates will result in savings of approximately $230,000 a year to its customers. The commission has the new rates under advisement.

Natural gas for additional areas of New York city and Long Island will be available upon the completion of the line now being built by Trans-Continental Gas Pipe Line Company, and scheduled to deliver gas to eight other metropolitan utilities some time late in 1950.

Whitcomb and Wood Promoted by Providence Gas

Donald Whitcomb

John L. Wood

Donald Whitcomb has been appointed general superintendent of the Providence Gas Company and John L. Wood has been appointed engineer of distribution succeeding Mr. Whitcomb.

After graduation from Yale in 1924 Mr. Whitcomb became a cadet engineer for Public Service Electric & Gas Co. From 1926 to 1932 he was a construction superintendent with Bartlett Hayward Co., and then served as general superintendent of County Gas Co., Atlantic Highlands, N. J. Since September 1945, he has been engineer of distribution of the Providence Gas Co.

Mr. Wood was graduated from the U. S. Naval Academy in 1924 and entered the gas industry as a cadet engineer at York, Pa., in 1926. After that he was plant superintendent and general superintendent of the North Penn Gas Co., Port Allegany, and then served as assistant to the gas engineer and division superintendent of Jersey Central Power and Light Co., Asbury Park, from 1931 to 1941. He was in active service in the Navy from 1941 to 1946 and rose to the rank of Commander. After about a year as general superintendent of gas operations at Jersey Central Power and Light, Long Branch, N. J., he went to Florida as superintendent of distribution for Tampa Gas Company. He became assistant engineer of distribution for the Providence company in August, 1948.

U. S. Radiator Names Weir Plant Manager

C. E. Weir is now manager of the Edwardsville, Ill., plant of the United States Radiator Corp., according to Wesley J. Peoples, chairman of the board and president.

Mr. Weir succeeds G. F. Naumann, who retired because of ill health.

Amer. Light & Traction Now American Natural Gas Co.

Stockholders of American Light & Traction Co. approved changing the company's name to American Natural Gas Co. at the annual meeting in Jersey City, N. J., on June 15.

William G. Woolfolk, chairman, attributed improved earnings largely to the fact that the cost of manufacturing gas in Detroit was substantially less than in the preceding year. This was due in part to the ability of the company to store natural gas in underground storage wells. Another favorable factor was rate increases in Michigan and Wisconsin, the system service areas.

The change in the company's name was to make it descriptive of the system's new function as an integrated natural gas transmission and distribution system.

With the proposed dissolution of the parent company, United Light & Railways Co., for which Securities and Exchange Commisison approval recently was requested, American Natural Gas Co. will be the only surviving holding company of a midwestern utility system which at one time numbered 10 holding companies and 42 operating companies doing business in 15 states from Wisconsin to Texas.

Directors of the company have elected F. W. Sharp vice-president and treasurer, and Stanton S. Faville secretary and general attorney. They succeed to most of the offices formerly held by Henry Tuttle, who has become executive vice-president of the subsidiary, Michigan Consolidated Gas Co.

Mr. Sharp was first assistant treasurer of American Light & Traction and Mr. Faville previously was an attorney with the company.

Four other officers of American Light continue in their same capacities with American Natural Gas. They are William G. Woolfolk, chairman of the company, Henry Fink, president, Ralph T. McElvenny, financial vice-president, and W. F. Douthirt, vice-president.

New Home Service Director

Mary Frances Lennon has been appointed home service director for distribution district No. 1 of the Pittsburgh Group Companies in The Columbia Gas System, Inc. With headquarters in the Olean, N. Y., office of The Keystone Gas Co., Inc., Miss Lennon will be responsible for home service activities in and near to that city, as well as across the state line in the Bradford and Warren areas served by the associated Manufacturers Light and Heat Co.

She will work under the immediate supervision of K. C. Wilson, district manager.

Pacific Coast Gas Ass'n Plans for Annual Meeting Sept. 7 to 9

A program of outstanding significance is promised for the Pacific Coast Gas Association's 56th annual convention, scheduled for Santa Barbara, Calif., on Sept. 7, 8 and 9, according to word received from Clifford Johnstone, managing director of the west coast organization.

The tentative list of speakers now being developed by Program Committee Chairman Robert A. Hornby includes several of national importance both inside and outside the gas industry, Mr. Johnstone declared. Following a practice adopted since the war, the proceedings will consist of a series of general sessions, all of which will be held at the Lobero Theater. The first session, slated for Wednesday afternoon, Sept. 7, will be devoted to association matters, including the report of the nominating committee, reports from section chairmen, and addresses by representatives of AGA and GAMA.

On Thursday morning delegates will hear discussions by PCGA members on various aspects of gas industry safety, marketing and supply problems. Thursday afternoon's session will be confined to a series of addresses on economic subjects by a panel of national authorities, and the final session on Friday morning will be devoted to employee relation problems.

Chairmen of the convention committees are:

Program — Robert A. Hornby; Convention Arrangements — George W. Smith; Hostess — Mrs. A. F. Bridge; Entertainment—M. L. Fort; Properties—F. B. Wright; Housing —C. H. Potter; Registration—R. F. Ogborn; Transportation — W. M. Minyard; Publicity—Otto C. Mauthe; Convention Newspaper—J. T. Van Rensselaer; Golf — George H. Finley.

C. M. Seiger Elected President of Canadian Gas Ass'n at Annual Convention

Charles M. Seiger, Hamilton, Ont., was elected President of the Canadian Gas Association at the annual convention held at Lake of Bays, Muskoko, Ont., June 16 to 20. Mr. Seiger is assistant general manager of the United Gas & Fuel Co.

Other officers elected are:

1st Vice-president—Hugh G. Smith, secretary, Consumers' Gas Co., Toronto.

2nd Vice-president—R. M. Perkins, manager, Windsor Gas Co., Windsor, Ont.

G. W. Allen, of Toronto, continues as executive secretary and treasurer.

Nearly 400 members and guests were present at the meeting, which was the 42nd in the Association's history. Alex. MacKenzie, of Toronto, President, presided, and H. W. Durgy served as chairman for the reading and discussion of certain papers.

Featured on the program was an illustrated talk by Dr. Oliver B. Hopkins, vice-president, Imperial Oil, Ltd., Toronto, on recent gas and oil discoveries in Alberta. He said that these developments would help Canada's economy, and would tend to make Canada almost completely independent of outside oil supplies.

The Hi-Btu oil gas plant at Port Stanley was described by H. E. Merill, chief engineer, Dominion Natural Gas Co., Buffalo, N. Y. (An article on this installation appeared in the February, 1949, issue of AMERICAN GAS JOURNAL.

Other papers which evoked interest and discussion were:

Canada and the Gas Industry, by T. Pates Pinckard, Vice-president and general manager, United Gas and Fuel Co., Hamilton; Catalytic Reforming and Thermal Cracking, by Edwin L. Hall, director AGA Testing Laboratories; How to Account for Unaccounted for Gas, by Milton W. Heath, President, Heath Tree Service, Wellesley, Mass.

The demonstration of the FM radio communication system of the Union Gas Co. of Canada, Chatham, Ont., proved an attractive feature to the audience. W. L. Dutton, operations engineer of the company, told how this system enabled the company to keep in constant touch with its men working in a widespread area.

Other speakers at the convention were: C. George Segeler, AGA; H. D. Valentine, The Peoples Gas Light and Coke Co., Chicago; and Miss Byrne Hope Sanders, editor of the *Chatelaine Magazine*.

The 1950 convention of CGA will be held at Murray Bay, Quebec, June 19 to 24.

Senate Confirms Buchanan FPC Appointment

Early in June the United States Senate confirmed the appointment of Thomas Chalmers Buchanan, of Pennsylvania, to be a member of the Federal Power Commission for the remainder of the term expiring June, 1952.

Investment Company Formed for Gas Securities

Organization of Gas Industries Fund, Inc., which will operate as a specialty fund investing in securities of companies identified with the gas industry, was announced in June. It is said to be the first investment company formed to specialize in this industry.

Registered with the Securities and Exchange Commission as an investment company, the company proposes to offer publicly 660,000 shares of common stock, par value $1, through an underwriting group headed by White, Weld & Co. Gas Industries Fund, Inc., will become an open-end investment company upon completion of the initial public offering of shares.

The Fund will be supervised and administered by its directors, assisted by its advisory board and its investment adviser, Colonial Investment & Management Associates.

According to the prospectus, the investment policy of the company is founded upon the increasing importance of natural gas as a source of fuel and energy. The assets of the Fund may be invested in all types of securities in the gas industry and related fields. It is intended, however, that emphasis will be placed on equities in the natural gas industry.

James H. Orr is president of the company and a member of its board. Mr. Orr is a general partner of Colonial Investment & Management Associates, president and director of Railway and Light Securities Company and president and trustee of The Bond Investment Trust of America. He is a director of The First Boston Corporation, Standard Accident Insurance Company and Pitney-Bowes, Inc.

Ralph E. Davis, geologist, engineer and consultant in the gas and petroleum industry, has been retained to advise on trends and developments within the industry.

In addition to Mr. Orr, directors of the company include Franz Schneider, executive vice-president, Newmont Mining Corp.; Henry A. Wood, Jr., Boston trustee, and Sherwin C. Badger, an officer of New England Mutual Life Insurance Co. Members of the advisory board include Thomas D. Cabot, treasurer of Godfrey L. Cabot, Inc., and a director of United Fruit Company; Horace S. Ford, treasurer of Massachusetts Institute of Technology, and J. P. Sedgwick, financial vice-president of The State Mutual Life Assurance Company.

Tin Research Institute Formed

John Ireland, director, Tin Research Institute, London, has announced the formation of Tin Research Institute, Inc., an American corporation devoted to providing free technical service to consumers of tin in the United States. The office at 492 West Sixth Ave., Columbus 1, Ohio, will handle all inquiries or requests for technical service, while a sponsorship will be maintained at Battelle Memorial Institute to handle new research.

A salesman won't do much selling sitting here....

The "Old Refrigerator Appraisal Plan" gives salesmen a new reason to go out and ring doorbells!

The days of sitting and waiting for Gas Refrigerator sales are over. Today, with most of the must-have buyers and new users satisfied, your market is predominanatly replacement. This calls for *creative selling!* For as long as old refrigerators still manage to give *fairly* good service, it takes plenty of sales effort to nudge owners into buying a new refrigerator. And here's just the nudge you can use to get many prospects off the fence—*an appraisal policy which includes a good trade-in deal and liberal time payments on a new Gas Refrigerator.*

Have salesmen make appraisals on every old refrigerator in your area

You can revive a salesman's interest in creative selling by putting this new slant on his calls. Have him approach the prospect, (1) to appraise her old refrigerator, and (2) to interest her in a new Servel. After giving her refrigerator a thorough examination, he can make her a trade-in offer based on your allowance policy. At the same time, he can explain your down payment and easy monthly financing plan.

If the old refrigerator is mechanical, the salesman's story will be particularly persuasive. He can show her convincingly that her refrigerator is likely to have a serious breakdown at any time—especially when overworked—and need expensive repairs. She will have to pay for these repairs herself since the guarantee has long since expired. That's why the salesman's Servel selling story will be doubly strong. In addition to offering her all the advantages of a brand new refrigerator, Servel provides her with the famous "no noise, no wear" freezing system that has no moving parts to ever need repair or replacement.

The "Appraisal Plan" is only one of several selling ideas that will help you beat the buyers' market. Servel, Inc., Evansville 20, Indiana.

STAYS SILENT . . . LASTS LONGER

Servel

The GAS Refrigerator

Jones and Knighton Take New Posts with Servel

J. K. Knighton

G. S. Jones, Jr.

George S. Jones, Jr., who has been vice-president in charge of sales at Servel, Inc., since 1936, has been named vice-president and assistant to the president, according to Louis Ruthenburg, president of Servel.

Mr. Jones in his new position will serve in an advisory capacity with respect to sales and other functions of the business.

John K. Knighton, who has been assistant vice-president in charge of sales and general sales manager, will become general sales manager, reporting directly to the management and assuming full responsibility for all sales functions of household refrigerator, air conditioner, water heater and export sales—sales promotion, advertising and sales research.

Mr. Jones came to Servel in 1933 as a district sales manager in Texas. He served in this capacity for a short time, later being named the company's regional manager in that area. He came to Evansville as general sales manager, and in 1936 was named vice-president in charge of sales.

Mr. Knighton joined Servel as manager of the All-Year Air Conditioning Division in 1939. He served in this capacity all during the company's development of this new product. In 1947 he was promoted to manager of sales, and in March, 1949, he was named assistant vice-president.

Other Changes at Servel

Mr. Knighton has announced other personnel changes in Servel's sales department.

O. F. Keune, who has been regional manager in the southeastern area, has been named assistant general sales manager with direct responsibility for field sales activity.

H. M. Wickman, who has been sales manager of the household refrigeration division, has been named assistant general sales manager on special assignment, and will give special attention to LP gas.

Mr. Knighton also announced the consolidation of service departments. Under J. C. Kellner, Jr., this new department will be known as the appliance service department. Emil Nensel, formerly manager of the water heater service department, will be assistant manager.

L. D .Eastmead, who has been the company's district manager in Georgia, Alabama and Tennessee, has succeeded O. F. Keune as regional manager in the southeastern area. R. G. Williamson, formerly a dealer manager in Florida for Servel, has been named district manager for Georgia, Alabama and Tennessee.

T. O. Hard, C. A. Spiegel and J. T. Mooney, formerly members of the Household Refrigerator Sales Department which has been discontinued, have been assigned to Mr. Keune's staff for specialized field sales activity. Also appointed to this specialized sales pool are D. P. Finney, Robert Clark, L. W. Hadley and E. C. Whitcomb, who were formerly dealer managers.

A. J. Gilbreath, also a former dealer manager, has been transferred to the international division as manager of air conditioning sales.

Markle Heads New Orleans Office of Youngstown

D. L. Markle, Jr., has been appointed district sales manager in charge of the New Orleans office for The Youngstown Sheet and Tube Co., succeeding the late Orville B. Ewing.

Mr. Markle is a native of Chicago. He joined Youngstown in 1938 as a salesman in the Dallas area and in 1949 was transferred to New Orleans because of the illness of Mr. Ewing.

E. C. Hemes Made Manager by Vulcan Proofing

E. C. Hemes

Edward C. Hemes has been appointed manager of the diaphragm division of the Vulcan Proofing Co., in charge of production and sales.

During the past three years, Mr. Hemes has been promoting the sale of synthetic meter and regulator diaphragms in the mid-west. Prior to his affiliation with Vulcan, he was employed for nineteen years by the Milwaukee Gas Light Co., as superintendent of meters and assistant superintendent of the West Side plant. He served as a member of the AGA Meter Committee from 1943 to 1946.

J. K. Vetter has replaced Mr. Hemes as Vulcan's mid-western representative and will be located in Deerfield, Ill. Mr. Vetter has been affiliated with Gas Consumers Service on the east coast and with The North Shore Gas & Electric Co., Waukegan, Ill., during the past 16 years.

AGA Holds Open House in Los Angeles

The American Gas Association was host to more than 225 visitors, including utility and manufacturers' representatives, during open house festiivties at its Pacific Coast Branch Testing Laboratories on May 25. The Laboratories now serve more than 100 manufacturers of approved gas appliances and certified accessories compared with some 70 manufacturers when the first open house was held in 1940.

Changes in AGA Research Assignments

Two major extensions of staff responsibiilty have been made to further integrate and coordinate American Gas Association research activities under the PAR Program.

Thomas Lee Robey was appointed secretary, AGA General Research Planning Committee succeeding Dr. N. K. Chaney. Mr. Robey continues his present duties as coordinator of gas production research.

Dr. Chaney's duties as AGA research consultant on gas produciton work have been broadened to cover domestic, industrial and commercial, and general technical research activities and projects. His services as consultant are now available to all committees engaged in research work.

Personnel Shifts Announced by American Stove

Eight major personnel changes in American Stove Company have been announced by Arthur Stockstrom, president.

Retirement at age 73, of Thomas M. Sourbeck, manager of the company's division at Lorain, Ohio, effective October 1.

Resignation of Stanley E. Little, vice-president in charge of sales, to become the new manager of the company's Lorain division.

Election of Marc W. Pender, of St. Louis, as vice-president in charge of sales. He was formerly market research manager.

Resignation of George E. Baker, of St. Louis, as treasurer, because of ill health.

Election of Clark P. Fiske, of St. Louis, as treasurer.

Election of F. Verne Semple, of St. Louis, former chief accountant, as assistant secretary and assistant treasurer, Mr. Fiske's former position.

Election of Harold H. Gearhart, former accountant, as controller, a new office in the company.

Resignation of Lloyd C. Ginn, advertising and sales promotion manager.

Lone Star Celebrates 40 Years Service

Celebrating the fortieth anniversary of the founding of the Lone Star Gas Company on June 4, 1909, the company's publication *Blue Blaze* appears in a jumbo edition that is rich with nostalgic photographs and recollections of early days.

From a small company starting out to supply gas from wells in Clay county, Texas, to consumers in Henrietta, Petrolia and Wichita Falls, the Lone Star system has grown until its area served now covers 160,000 square miles.

In a message to employees, D. A. Hulcy, president, keynotes the anniversary by saying: "The growth and development of Lone Star . . . has been possible, in the main, because the people of Lone Star have conducted themselves so as to reflect credit on the company of which they are a part; and we have worked as a team to give our customers dependable service at all times."

Groups Are Working on Frequency Assigments for Mobile Radio Service

Newly elected officers have been announced for two frequency coordinating organizations which will play a major role in advising gas company users of mobile radio service in the selection of unimpaired frequencies. Details have been provided by Warren T. Bulla, Natural Gas Pipeline Company of America, Chicago, as vice-chairman, American Gas Association Mobile Radio Committee, in the absence of E. M. Borger, president, The Peoples Natural Gas Co., Pittsburgh, and chairman of the AGA group.

Following a recent order by Federal Communications Commission, long-haul natural gas systems having no major distribution properties will be assigned radio frequencies in the petroleum service category. On the other hand, gas companies having primarily distribution properties will be provided frequencies in the power utilities service category.

M. V. Patterson has been elected chairman, National Committee for Utilities Radio, an engineering unit established to work jointly with the FCC staff on Mobile radio problems. J. G. McKinley has been elected vice-chairman, and Dale Schreiner, secretary.

H. A. Rhodes has been elected chairman of the newly-initiated National Petroleum Radio Frequency Coordinating Association. Mr. Bulla has been elected vice-chairman, and W. G. McLarry, secretary-treasurer.

Regional Break-down

The regional chairmen for the new petroleum group, with the territories in which they will operate, are:

Region 1—W. A. Shipman, United Fuel Gas Co., Charleston, W. Va., chairman (Maine, Vermont, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia and West Virginia).

Region 2—J. D. McCullough, Buckeye Pipe Line Co., Lima, Ohio, chairman (Ohio, Kentucky, Indiana, Illinois, Michigan and Wisconsin).

Region 3—L. C. Bomar, Southern Natural Gas Co., Birmingham, Ala., chairman (North Carolina, South Carolina, Tennessee, Alabama, Georgia and Florida).

Region 4—R. S. Caplan, Gulf Refining Co., H. P. L. Division, Houston, Texas, chairman (Texas, Arkansas, Louisiana and Mississippi).

Region 5—W. T. Born, Amerada Petroleum Co., Tulsa, Okla., chairman (Oklahoma, Kansas, Nebraska, South Dakota, North Dakota, Minnesota, Iowa, Missouri).

Region 6—K. S. Hagius, Colorado Interstate Gas Co., Colorado Springs, Colo., chairman (Montana, Wyoming, Colorado, Utah and New Mexico).

Region 7—J. A. Polhemus, Jr., Standard Oil Co. of California, San Francisco, Calif., chairman (Washington, Oregon, Idaho, Nevada, California and Arizona).

Industry, which is familiar with operations of a large number of companies and with the problems involved in congested areas such as the Great Lakes region and the Texas-Louisiana gulf coast region, is endeavoring to work out a national pattern of suggested frequency assignments to aid the FCC. Allocations of frequencies in some instances may not be available until July, 1950, because of present occupancy by other services. It is expected that the next twelve months will be a period of transition.

Further details of frequency assignment will be worked out at a forthcoming meeting of the AGA Mobile Radio Committee followed by meetings with the petroleum and power groups.

May Revise Standards For Floor Furnaces

A recommended reviison of the commercial standard for gravity circulating gas floor furnaces has been submitted by the National Bureau of Standards to manufacturers, distributors and users for consideration and approval.

Proposed requirements cover mechanical venting devices and contain several adjustments designed to clarify the intent of certain paragraphs and to improve the technical requirements of others. The draft has the endorsement of a representative standing committee.

Mimeographed copies of the recommended revision (TS-4821) are available from Commodity Standards Division, National Bureau of Standards, Washington 25, D. C.

Universal Oil Products Co. Develops New 'Autothermic' Cracking Process

A new process, called "autothermic cracking" has been developed in the laboratories of Universal Oil Products Company, Chicago, and is ready for commercialization. It will reform propane or other volatile hydrocarbons in admixture with air to make supplementary gas to meet emergency peak load demands. For petrochemical manufacturers it will crack ethane, or other economically available volatile stock, converting it to ethylene.

It is claimed that the "Autothermic" process is extremely flexible with respect to throughput, pressures of operation and raw material. These characteristics, combined with quick starting and low capital cost, are said to make it particularly adapted to meeting unpredictable emergencies.

A news release from Universal Oil Products Co. reads as follows:

"Autothermic cracking consists in reforming propane, naphtha, natural gasoline or other volatile hydrocarbons in admixture with air to make supplementary gas approaching the normal sendout in quality. By varying the proportions of air to hydrocarbon, gases of a wide range of calorific value can be produced.

"R. M. Deanesly, a Universal research chemical engineer, started with the basic idea of conducting cracking reactions by admixing air wtih the charge stock rather than by external heating. The mechanism of the process consists of preheating separately the air and hydrocarbon streams, mixing while hot, and reacting in a small insulated vessel. The hydrocarbon-air mixture is rapidly converted to reformed gas and nitrogen. The hot gases leaving the reactor are cooled by heat exchange.

"Essentially the same procedure can be applied to the production of ethylene as has been described for gas making. The preferred raw material for either operation depends on the location of the plant, and other factors.

"The Autothermic process has been tested and proved in pilot plant operations producing 1000-2000 cubic feet of gas an hour, and thorough burner tests on the gas have been conducted by engineers of large gas companies.

"Propane-air plants now being used by gas comapnies to produce peak load gas can be readily converted to the Autothermic process.

"The versatility of the process suggests the interesting possibility that an Autothermic plant might be profitably employed full time, producing ethylene during the gerater part of the year but being instantly convertible to gas produtcion in emergency."

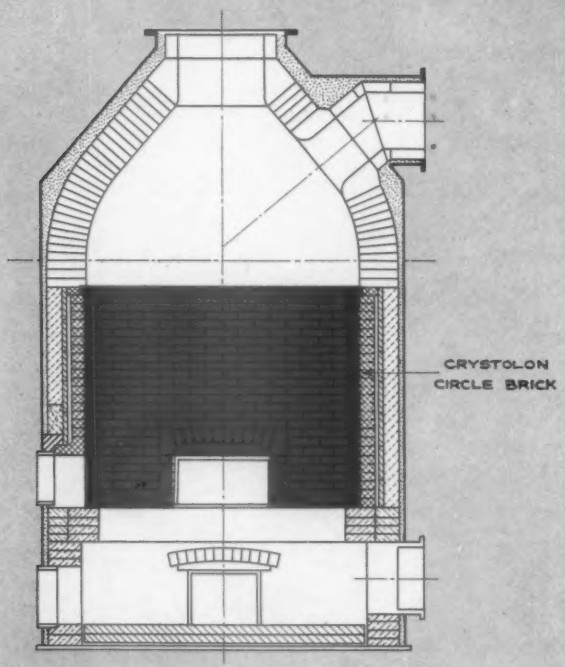
Gas Dominates Los Angeles Building Show

Gas and gas appliances took the spotlight at the fourth annual National Building Exposition and Home Show at the Pan Pacific Auditorium in Los Angeles from June 2 through June 12. A crowd of more than 110,000 contractors, builders, architects and home owners attended.

Largest of any at the exposition, the Southern California and Southern Counties Gas Companies booth was in space number one, an unbroken, four sided area, 43 by 53 feet, directly in front of the main entrance. The colorful exhibit of gas appliances was housed in a modern home.

The display contained three New Freedom Gas Kitchens, each completely air conditioned. Other features were a model home laundry and a model outdoor barbecue. In addition, a large number of the latest models of automatic gas water heaters, CP automatic gas ranges, and gas refrigerators supplemented the gas kitchen displays.

Generator lining pays for itself in One Year . . . when long-lived CRYSTOLON Brick are used . . .



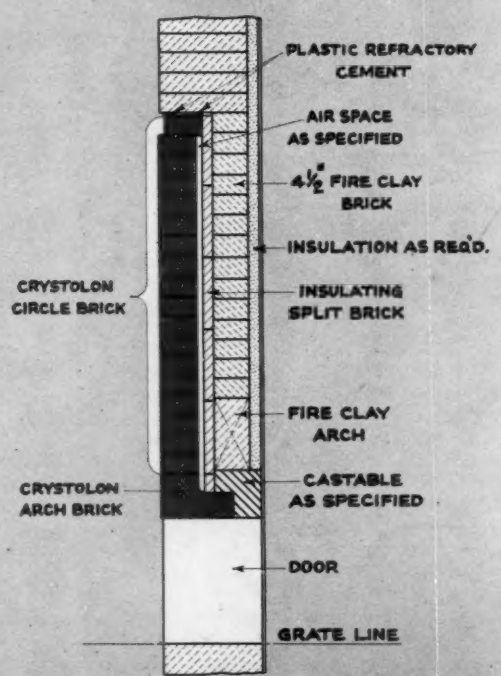
The commercial manufacture of gas involves the skillful handling of high temperatures which are accompanied by severe chemical conditions. One of the basic problems in gas production, therefore, is a refractory problem. The most successful refractory for lining gas generators is silicon carbide which Norton Company manufactures under the trade-mark of CRYSTOLON.

(left) Sectional drawing of gas generator lined with CRYSTOLON refractory shapes.

CRYSTOLON brick are helping many plant superintendents three ways: increased plant capacity, decreased maintenance costs, long lining life.

Where CRYSTOLON brick are used to line the fire zone of the generator, "downtime" for clinkering is greatly reduced. These brick present an impenetrable surface to clinkers with the result that walls are quickly cleaned leaving a larger effective furnace cross-section than with less refractory brick.

(right) Cross-section of gas generator wall showing details of refractories includ- CRYSTOLON inner lining.



CRYSTOLON brick decrease maintenance cost by greatly extending periods between repair jobs and by reducing cleaning time. Because of the dense, hard surface of CRYSTOLON brick it is only necessary to break the clinker ring in one place and the entire ring will then fall free. CRYSTOLON linings often pay for themselves the first year by savings in cleaning costs alone.

The results which may be expected from the CRYSTOLON lining will vary with different operating conditions. In some cases, a total operating time of 8000 hours is considered satisfactory. Over 22000 hours have been attained without major repairs.

NORTON COMPANY
Worcester 6, Massachusetts

United Gas Corp. To Have New York Office

At the organization meeting of the United Gas Corporation in New York on June 22, Donald T. Howell of New York was elected assistant secretary and assistant treasurer and will be in charge of the office the company is opening at 2 Rector Street, New York.

The headquarters of United Gas remains in Shreveport, but because of the proposed dissolution of Electric Power & Light Corporation, whereby the stock of United Gas Corporation held by the Electric Power & Light Corporation is being distributed to its stockholders, it was thought advisable to maintain in New York a company representative inasmuch as the company's registrar and transfer agent are located in New York.

At the annual meeting of the corporation Clifton L. Ganus, of New Orleans, Burke Baker, of Houston, and George G. Walker, of New York, were added to the board of directors.

19 Manufacturers Take Part in Restaurant Exhibit

Twelve flames marked the boundaries of the large AGA combined exhibit at the annual exposition of the National Restaurant Association, Atlantic City, May 24-27. Under the banner, "Gas Equipment on Parade," 19 manufacturers of heavy duty commercial cooking equipment made up the largest single exhibit at the show.

A complete list of exhibitors in the combined exhibit follows:

American Stove Co., Cleveland
Anetsberger Brothers, Inc., Northbrook, Ill.
The G. S. Blodgett Co., Inc., Burlington, Vt.
The Cleveland Range Co., Cleveland
Detroit-Michigan Stove Co., Detroit
Duke Mfg. Co., St. Louis
Groen Mfg. Co., Chicago
B. H. Hubbert & Son, Inc., Baltimore
Lyons-Alpha Products Co., Inc., New York
Market Forge Co., Everett, Mass.
National Cornice Works, Los Angeles
J. C. Pitman & Sons Sales Corp., Lynn, Mass.
Sellers Engineering Co., Chicago
Robertshaw Fulton Controls Co., Youngwood, Pa.
Ruud Mfg. Co., Pittsburgh
Savory Equipment, Inc., Newark
A. O. Smith Corp., Milwaukee
Standard Gas Equipment Corp., Baltimore
Trubake Gas Oven Co., Inc., New York

Minneapolis-Honeywell Makes Personnel Changes

John R. Lenox has been named manager of industrial relations and the personnel department of Minneapolis-Honeywell Regulator Co., George A. DuToit, Jr., vice-president in charge of manufacturing, has announced.

Sherwood M. Sitz, who has been directing industrial relations at the company's Minneapolis factories, has been promoted to director of industrial relations in a consulting capacity for the entire organization, including subsidiary companies.

George B. Benton, who has been personnel manager, has been transferred to the company's expanded insurance department and will make his headquarters at the home office in Minneapolis.

Movie on Pipe Line Coatings Is Available

Dearborn Chemical Company has recently completed a 16 mm. color and sound movie showing the application of hot applied pipe line coatings. It is available without charge for showings by trade groups, engineering societies, contractors, and utilities.

"Piping Hot" is the name of the new motion picture of Dearborn Chemical.

"Shots" from the new 16 mm movie on pipe line construction and maintenance.

This movie, which runs 22 minutes, covers the coating by stationary type machine of 24 inch pipe and the laying of pipe in an urban area.

Additional scenes taken in Dearborn Laboratories show control procedures, testing, and the manufacture of pipe coatings and wrappers.

Dearborn has prepared a 16 page booklet giving a pictorial synopsis of the movie for distribution to audience groups. To arrange a booking, write Advertising Department, Dearborn Chemical Company, 310 S. Michigan Ave., Chicago 4.

Boehm Made Chief Engineer of Schutte & Koerting

Frederick Boehm has been made chief engineer of Schutte and Koerting Company, Philadelphia, Pa. He joined the company in 1930, and was head of the jet and meter departments.

East Ohio's Motion Picture Wins Honors

The United States Department of State has requested that East Ohio Gas Company, Cleveland, furnish 15 prints of East Ohio's film, "Our Silent Partner," for use abroad in various United States Embassies.

Additional recognition for "Our Silent Partner" was in the form of an "Oscar" awarded during the annual film festival of the Cleveland Film Council on June 16. Selected films covering industrial, religious and educational fields were reviewed; it was under the classification of public relations that East Ohio's film was judged best.

'Our Silent Partner" was first released for distribution to Northeastern Ohio groups on May 1, and is being shown daily upon request.

Britain Ups LP-Gas Output

Considerable expansion in the production of liquid petroleum gas is anticipated in Great Britain over the next five or ten years as a result of large expansion in refinery capacity now projected. Plans working or proposed involve an expansion of British refinery output from the prewar level of 4½ million tons to approximately 20 million tons.

A further eight million tons a year remains to be approved by the government, but a conservative estimate is an output of 22 million tons by 1953. This program is designed to make Britain largely self-supporting.

Among the major subsidiary products is a large potential of refinery gas. In one csae it is proposed to feed high olefine content gas to an adjacent plant which will manufacture aliphatic alcohols and ketones. The availability of gas in all these plants will encourage an expansion along these lines. The saturated hydrocarbons, butane and propane will also be available for sale as liquid gas while it is also considered likely that methane may be profitably piped for mixing with city gas. Production of carbon black is also contemplated.

A. O. Smith Opens New Plant at Union, N. J.

The Product Service Division of A. O. Smith Corp. held "Open house" recently at its new plant in Union, N. J., to formalize the location of eastern customer service operations at the specially designed Union plant.

Like branches in Chicago and Los Angeles, the new Union plant performs servicing of "Smithway" products. One of the services is a 24-hour off-the-shelf replacement of parts, from a $1,000,000 inventory of products and pre-packaged parts. The new branch also makes field studies, does testing and research work, and is equipped to conduct service training schools for salesmen.

From the plant, A. O. Smith serves its eastern customers from Maine to Florida. C. L. Tracey is in charge at Union, while the division nationally is headed by J. J. Bohmrich.

U. S. Supreme Court Rules Against F P C in Panhandle Eastern Case

The Supreme Court on June 20 ruled that the Federal Power Commission has no control over the way a natural gas company disposes of its gas reserves.

The ruling upheld a decision by the United States Circuit Court in Philadelphia in a case involving the Panhandle Eastern Pipe Line Company.

Justice Stanley Reed delivered the high tribunal's 5-3 ruling.

Panhandle owns a natural gas pipe line system originating in Texas, Oklahoma and Kansas. The system extends into Missouri, Illinois, Indiana, Ohio and Michigan.

The company decided to transfer gas production leases on 96,000 acres of its gas reserves in Kansas to the Hugoton Production Company, organized by Panhandle under Delaware laws. The Panhandle leases were transferred to Hugoton in exchange for Hugoton's entire capital stock. Hugoton later contracted to sell the gas to the Kansas Power and Light Company.

The FPC sought to intervene but Panhandle resisted. The commission then asked the United States District Court in Delaware to order a halt to the deal pending study of the plan.

The District Court refused the FPC request and was upheld by the Circuit Court in Philadelphia. The commission then asked a high court review.

Justice Reed said that Congress clearly showed that it did not intend to give the commission power over sale of gas reserves. He added that the commission for ten years never had made such a claim of authority.

"Failure to use such an important power for so long a time indicates to us," Justice Reed said, "that the commission did not believe the power existed.

"In the light of that history we should not, by an extravagant, even if abstractly possible, mode of interpretation, push powers granted over transportation and rates so as to include production."

CONVENTION CALENDAR

August

8–11 *National Assn. of Railroad & Utilities Commissioners,* Hotel Cleveland, Cleveland, Ohio.

September

6–8 *Mid-West Gas Assn. School and Conference,* L Iowa State College, Ames, Iowa.

7–9 *Pacific Coast Gas Assn.,* Santa Barbara, Calif.

9 *New Jersey Gas Assn.,* Monmouth Hotel, Spring Lake, N. J.

9–10 *Maryland Utilities Assn.* Fall Conference, Virginia Beach, Va.

19–21 *National Butane-Propane Assn.,* St. Louis, Mo.

26–28 *Controllers Institute of America,* San Francisco, Calif.

October

11–14 *American Standards Assn.* Annual Meeting, Waldorf-Astoria, New York.

13–14 *Texas Mid-Continent Oil & Gas Assn.,* Annual Meeting, Rice Hotel, Houston, Texas.

17–20 *American Gas Assn.,* Annual Convention, Chicago, Ill.

Operating Conditions Vary But—

REYNOLDS REGULATORS

Meet Each and Every

GAS CONTROL REQUIREMENT

REYNOLDS Builds a Regulator for every type of Gas Control Installation. Proved by records of performance in actual operation, or by records of factory tests on new developments, every REYNOLDS unit—whether for high pressure or low—is a proved product.

Long life, efficient operation, accurate regulation, reasonable cost, low upkeep—these are the vitally important inherent features built into REYNOLDS Gas Regulators through more than 50 years of experience in developing, designing, building and testing Gas Control equipment.

Reynolds Products...

High Pressure Service House Regulators: Straight Lever Type—Models 10-20 Series. Toggle Lever Type—Model 30 Series
Low Pressure Service or Appliance Regulators
District Station Regulators, Single or Double Valve, Auxiliary Bowl and Automatic Loading Device Optional
High Pressure Line Regulators Pilot Loaded—Pilot Controlled
Toggle Type Regulators. Single Valve, Double Valve, Triple Outlet
Seals: Dead Weight or Mercury
Relief Valves: High or Low Pressure
Back Pressure Valves. Automatic Quick-Closing Anti-Vacuum Valves
Automatic Shut-off Valves
Lever Operated Valves
Louver Operated Device
Atmospheric Regulators
Vacuum Regulators

For full cooperation of our Engineering Department, write our Factory, Branch Offices or Representatives.

☆

BRANCH OFFICES

423 Dwight Building
Kansas City, Missouri

2nd Unit
Santa Fe Building
Dallas, Texas

☆

REPRESENTATIVES

Eastern Appliance Company
Boston, Massachusetts

Waldo S. Hull
163 W. Queen Lane
Philadelphia, Pa.

R

REYNOLDS GAS REGULATOR COMPANY

☆ ANDERSON, INDIANA, U. S. A. ☆

GAS CONTROL SINCE 1892

Appliance Venting

(Continued from page 11)

goes on. You likewise know that it it is going to take trained, experienced service to make it right. Ignoring it does not remedy it. Until it is fixed you will find it impossible to enjoy motoring. Why not take care of it at once?

There is no hokus pokus or mystery about venting gas appliances. The Purdue report succinctly states that there are two reasons for venting gas appliances, safety and the removal of the water vapor content of the combustion product. It shows that there are only three parts to the venting installation—air for combustion and venting, the fume pipe from the appliance draft diverter to the flue, and the vertical flue or chimney.

It then presents the findings of a nationwide survey of existing installations which bring out that there are four principal reasons for failure of venting installations to provide adequate disposal of the flue products to the outside atmosphere: (1) Excessive thermal losses from vents and flues; (2) Exterior wind pressures; (3) Frictional resistances; (4) Negative interior pressures. These four comprise nearly 90 per cent of the causes of failures. Insufficient flue capacity was responsible in about five per cent of the cases, while blocked flues, broken vents and flues come under the head of maintenance rather than design.

In our future articles we will attempt to analyze these points and how they affect the design and installation of venting various types of appliances. Meanwhile comments will be appreciated.

INSIDE STORY

"Superior" QUALITY

That Is More Than Tin Deep

EXTRA QUALITY FEATURES AT NO EXTRA COST:

★ One-piece, double tinned, ribbed steel carriage for faster repairs
★ Bottoms loaded—stops corrosion even if tin coating is scuffed
★ Heavier tinplate for tables & bottoms—extra rigid; better proofs
★ Flanged cases—for sweated seams & tight corners; extra strong
★ Forged brass side pipes—no porosity, no corrosion, no solder leaks
★ Heaviest British tinplate used for biggest capacity meters

1,000,000

Completed Meters Are Our Best Salesmen!

ALL SIZES 5B TO 60C

SUPERIOR METER CO., INC.

167 41st Street, Brooklyn 32, N. Y.

Respected By 2 Generations of Meter Men

• Meters • Meter Repairs • Diaphragms • Parts • Accessories

SEND FOR BIG FREE CATALOG

Financing

(Continued from page 12)

mained for distribution under the excess subscription offer, Southern was able to allocate under this feature of the plan only a small proportion of the stock so requested by warrant holders.

The necessary ingredients for a successful offer of this type might be described as: A good product, correctly priced, and with the management aware of the advisability of letting prospective investors know the current position and prospects for the company.

Southern's record for the past many years has been one of consistent gains in output and earnings. Stockholders and prospective investors were assured that dividends would be continued on the enlarged stock at the $2.00 per share rate previously in being—a yield of 7.7 per cent at the offering price and, last but far from least, the 43 per cent increase in pipe line capacity which the company effected just prior to the 1948 year-end will permit Southern to show consolidated net earnings for 1949, on the enlarged stock, bettering the $3.15 a share which it reported for 1948.

Stockholders were kept well advised of the dividend outlook and considerable stress was placed on the material increase in plant capacity which had not been fully reflected in earnings.

Daniel J. Brogan Dies Suddenly

Daniel J. Brogan, sales manager for the last twelve years for G. S. Blodgett, Inc., oven manufacturers, died on July 7 of a heart attack in Grand Central Terminal, New York, while about to go to his home in suburban Tuckahoe. His age was 50.

Prior to his affiliation with Blodgett, Mr. Brogan was with Consolidated Edison Company of New York. For years he was active in AGA committee work.

Here are the members of the newly named national organization which will handle the combined distribution of "South Wind" and "Saf-Aire" domestic heating units for the South Wind Division of Stewart-Warner:

Front row, left to right, John Weller, Portland, Ore.; H. W. Hayward, Harocarl, Inc., Syracuse; Howard Weller, Portland, Ore.; Norris Blanchard, Norris Blanchard Co., Omaha, Neb.; W. J. Hawkins, service manager, Factory; Frank McMorrow, Frank P. McMorrow Co., Cleveland; Raymond J. Costigan, New York; Frank Davenport, Frank P. McMorrow Co., Cleveland; G. Robert Parker, G. Robert Parker Co., Denver; P. L. Tolerton, LaJolla, Calif.

Back row, left to right, C. R. Binford, advertising manager, Factory; Wm. H. Webster, Jr., Norfolk, Va.; John Carrol, Harocarl, Inc., Syracuse; Emory C. Perry, Emory C. Perry and Co., Chicago, Ill.; H. W. Milner, sales manager, Factory; W. E. Judd, general sales manager, South Wind Division; Allison Scott, Dallas; M. A. Disney, Temperature Equipment Corp., St. Louis; E. L. Boyd, Boyd Distributing Co., Detroit; R. F. Devaney, Factory Branch, Los Angeles; Richard H. Poe, Northeast Utilities Equipment Corp., Stamford, Conn.

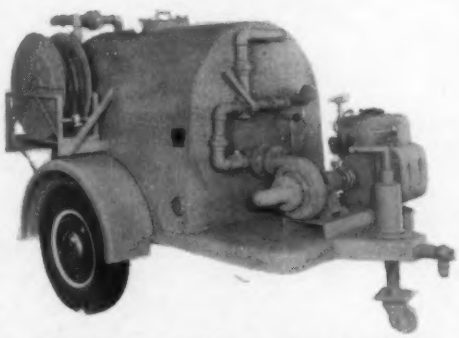
South Wind Makes Plans for National Distribution

Arrangements for combined national distribution of the two types of gas-fired domestic heating units produced by the South Wind division of Stewart-Warner Corp. have been announced by H. W. Milner, domestic heating equipment sales manager.

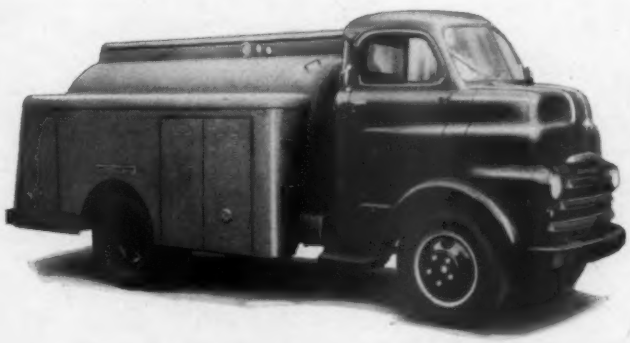
The two units will be handled by ten factory representatives, plus two factory branch sales offices, at Dallas and Los Angeles, Mr. Milner revealed at a two-day convention of sales and factory personnel at Indianapolis in June. Sales will be through jobbers serving the heating and plumbing trades and "dealers who are equipped to render full installation and maintenance service," he said.

The units are two sizes of Saf-Aire wall furnace, which has had national distribution for approximately two years, and the South Wind wall and furnace-type Zone Heating system heretofore marketed only in California and Texas because of gas shortages elsewhere. The Saf-Aire is a room heater while the South Wind is capable of heating up to two and a half rooms.

A national advertising campaign, covering the two types of heaters, is scheduled for Fall appearance.



NEWLY DESIGNED TRAILER MODEL



Remove Condensate from Drips and Open Clogged Service Leads

WITH THE WHITTINGTON

Hydro-Scavenger

The Hydro-Scavenger cleans drips up to 25 feet deep... unloads at a rate up to 100 gallons a minute! Creates 27" Hg. vacuum for loading; 20 pounds pneumatic pressure for unloading—to overhead tank, if desired. Simple design and rugged construction assures years of trouble-free operation without loss of vacuum or pressure. Material handled does not pass through the pump to cause clogging or wear. Available in truck, trailer and skid models. Collection capacities from 50 to 1,000 gallons.

WRITE FOR BULLETIN HS-49

WHITTINGTON

PUMP & ENGINEERING CORP.

Specialists in Vacuum Systems

1126 Prospect Street
Indianapolis 3, Indiana

Rheem Has Water Heater for Low Ceiling Rooms

Production of the first in a series of water heaters designed especially for installation in rooms and basements with low ceilings has been announced by Rheem Manufacturing Co.

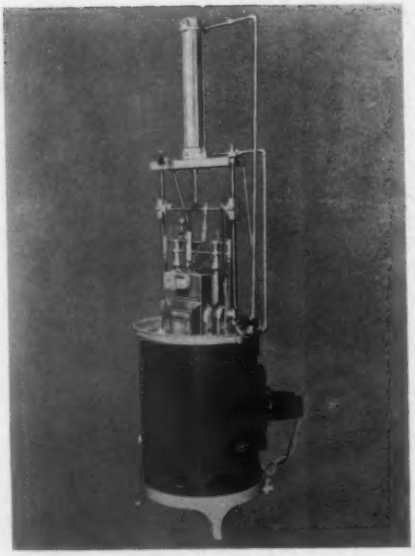
The new model stands only a little more than four feet high and has a storage capacity of 30 gallons. The heat input rate is 24,000 Btu with a recovery rate of approximately 33.6 gallons an hour. It carries the company's five year tank protection plan and the approval of the AGA. Models in several other sizes will follow.

Improved Hydropneumatic Meter Tester

American Meter Company announces the development of an improved hydropneumatic meter tester, which increases speed of operation and decreases physical effort by replacing the counter weights and foot operated pantagraph levers with an air cylinder.

The manufacturer states that by means of a hand operated three way cock the carriage with meter in place can rapidly and easily be raised or lowered to the proper location. In addition leaks can more readily be detected through improved visibility provided by a light and reflector mounted over a glass window in the side of the tank.

It is stated that this method of providing interior lighting of the tank has proved



New Meter Tester

far superior to the immersed type submarine light previously used, and that the hydropneumatic meter tester detects the presence of leaks and indicates their exact location.

The meter rests on a platform attached to a movable carriage and it is locked tight to the connections by lever-operated eccentric straps. Air pressure is shown by a gage mounted in the top yoke and is admitted to the meter through the inlet tube screw for testing before the meter is topped. Leaks in stuffing boxes, gallery and case are detected in this test.

After topping, a spring-release piercing tool punches a hole in the top and an eccentric mounted connection is pressed over the hole and held in place by a ratchet rack device. Air is admitted through this connection to detect any leaks above the valve table. The carriage accommodates five and ten light meters.

Cooper-Bessemer Announces New Gas Engine

The development of a supercharged 4-cycle gas engine, claimed to increase power output by 80% while cutting fuel consumption by one-third, has been announced by The Cooper-Bessemer Corporation. The engine attains efficiencies equal to or exceeding the best performance of gas-diesels, company officials stated.

According to R. L. Boyer, vice-president and chief engineer, successful development of the engine was aided materially by new principles worked out while perfecting the Turboflow gas engines of 2-cycle design.

"For example," said Mr. Boyer, "our findings that permitted a more intimate mixture of gas and air, combined with Turboflow ignition, opened the way to the supercharging of this 4-cycle engine. It is the successful application of supercharging, of course, that is largely responsible for the engine's performance.

"We are able to report on the power and fuel economy features of the new engine with complete certainty," he continued "because it has completed all tests with entire satisfaction. Where conventional spark-ignited gas engines operate on a fuel input of 9,500 to 10,000 Btu per horsepower hour, the new engine requires less than 7,000 Btu. By achieving an increase in brake-mean-effective pressure from the normal 70 pounds to 125 pounds per square inch, the new engine is able to produce an 80% power increase over ordinary gas engines with the same piston displacement."

It is claimed that the new engine requires no increase in cooling equipment, and that it can be easily and quickly converted to either gas-diesel or full oil-burning diesel operation. Cooper-Bessemer plans call for building the new engines in various sizes, with regular production scheduled between now and year end.

Noppel Made Vice-president of Ebasco Services

Election of Edward P. Noppel as a vice-president of Ebasco Services Inc., of which he has been a director since 1942, has been announced by T. C. Westcott, president.

Mr. Noppel has been associated with Electric Bond & Share and its subsidiary, Ebasco Services, since 1925 when he began as an assistant gas engineer. Later he became sponsor engineer, operating sponsor and general consultant.

GASMACO VALVES

These all-iron valves are the best obtainable. All parts are inspected carefully before assembly and the seating surfaces of the disc and body are ground true. All valve surfaces subjected to wear are of generous proportion and clean out holes are provided.

GASMACO offers "cone disc" double-gate valves . . . hand or hydraulically operated . . . blast valves . . . butterfly valves . . . angle valves . . . hot valves . . . explosion check valves . . . steam and gas reversing valves . . . stack valves . . . and other types which may be designed specially for your needs.

GASMACO engineers are always at your service. Please contact us regarding your requirements.

THE GAS MACHINERY COMPANY

16114 WATERLOO ROAD
CLEVELAND 10, OHIO

Designers, Fabricators, Erectors
Gas Plant Equipment and
Industrial Furnaces

Girdler Gets Contract

The Texas Gulf Sulphur Company is having erected at Worland Dome, Washakie County, Wyoming a gas treating plant to extract the hydrogen sulphide from natural gas coming from wells operated by the Pure Oil Company, and a sulphur recovery plant to reduce the hydrogen sulphide to elemental sulphur. The Girdler Corporation is the general contractor supplying the engineering design and all equipment. The extraction of the hydrogen sulphide from the natural gas will be by means of the Girbotol process developed by the Girdler Corp.

Tappan Production Up 25%

The Tappan Stove Company has increased production by 25 per cent to meet the increase in orders, according to Alan P. Tappan, president.

"Business is good," he said. "Our inventory is at a lower point than we normally carried before the war and orders are coming in currently at a rate in excess of our production."

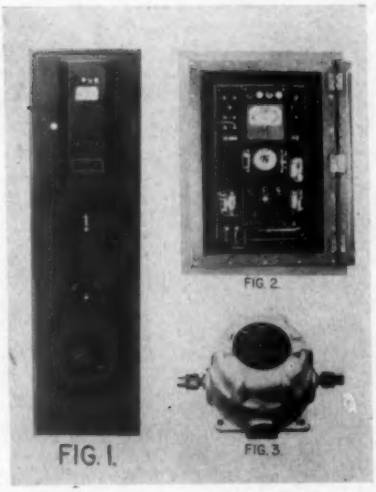
He pointed out that sales for the first five months of 1949 have been maintained at a rate which is 85 per cent in excess of 1941, the best pre-war year in the history of the company.

Combustible Gas Detector

A Combustible Gas Detector and Safety Controller for plant protection has just been approved by the Underwriters' Laboratories and also by the Associated Factory Mutual Fire Insurance Co.

In operation, the Lor-Ann Detector continually samples and analyzes plant atmosphere where combustible gas accumulations present a fire or explosive hazard. When gas accumulation approaches a dangerous volume, an automatic alarm, both audible (bell and/or siren) and visible (neon signal light) is given and at the same time this unit automatically takes over control of the plant's operating machinery, fire-fighting system, ventilation system or both depending upon protection requirements.

The instrument is contained in an airtight and dust-proof control cabinet mounted on a self-supporting steel panel which also houses a heavy duty, rotary vane, forced feed lubricated, suction pump from which tubing leads to the gas analysis cells or "remote heads" which are placed at any distance from the main control panel, the analysis taking place in the gaseous area and instantaneously "telegraphed" to the control panel.



1:—Front view; 2:—Cabinet interior; 3:—Sampling analyzer head.

The alarm point setting is variable and can be set from 20-100% of the lower explosive limit for any given gas. A wide-faced meter gives a constant reading of gas concentrations. It operates on 110 volts 60 cycles and is provided with a 3-wire grounded neutral protective system.

Manufactured by Lor-Ann Instrument Co., Inc., 58 Montgomery St., Jersey City, N. J.

Selas Corp. to Produce Davison Dehydrators

Effective July 1, the Selas Corporation of America, Philadelphia, will take over the industrial dehumidification equipment activities of The Equipment Section, Engineering Division, The Davison Chemical Corporation, Baltimore. R. S. Van Note, formerly manager of The Equipment Section, has joined Selas as manager of the dehydrator division.

Possibility of Natural Gas for Baltimore

Consolidated Gas Electric Light and Power Co. of Baltimore on June 10 executed a new contract with the Atlantic Seaboard Corporation for the supply of natural gas, according to a letter to stockholders of the Baltimore utility from Wm. Schmidt, Jr., President.

The communication continues:

"Atlantic Seaboard has applied to the Federal Power Commission for authority to serve us under the new contract and hearings on the application were completed on June 24. If FPC issues a favorable decision in the near future, it seems possible that a change-over to natural gas supply by our company may begin during the second quarter of 1950."

Perfection Acquires Acorn, Oriole Ranges

Perfection Stove Company, Cleveland, Ohio, has acquired the patents and trade names of the Acorn and Oriole range lines, manufactured by Standard Gas Equipment Corp. of Baltimore, Md., along with certain other physical assets of the Baltimore company. Included is the exclusive right to manufacture and market Oriole and Acorn gas ranges.

Tools, dies, jigs and molds acquired will immediately be shipped to Cleveland and manufacture of the Oriole and Acorn lines will be undertaken soon.

This business deal links the products of two companies having a combined total of almost 200 years experience in the stove manufacturing business. Perfection initiated its manufacture of kerosene cook stoves more than 61 years ago. Just a few months ago Perfection entered the gas range field with three models. Standard Gas Equipment has been making the Acorn range since 1830, and the Oriole was introduced in 1911.

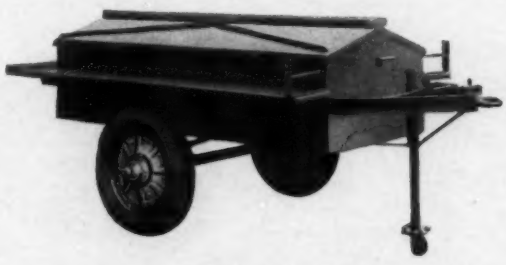
Acquisition of the Acorn and Oriole lines gives Perfection 20 additional gas models, including CP and apartment-size gas ranges. These, however, will not affect work now being carried out on similar models which will carry the Perfection name plate.

Along with Perfection's own ranges, the Acorn and Oriole ranges will be manufactured in the company's newly-expanded plant in Cleveland.

MOHAWK

HI-SPEED TRAILER TOOL CARTS BACK IN PRODUCTION

Internal construction can be varied to meet your particular requirements



Model G—7 ft. Cart

MULCARE ENGINEERING CO., Inc. **53 Park Place, New York 7, N. Y.**

Special Pipe-Stripping Buckets

Patented Stripping Buckets for stripping pipe for take-up and repair have been announced by The Cleveland Trencher Company as now available. The special buckets are designed for installation on the

New Stripping Buckets.

digging wheel of Cleveland's trenching machines.

The buckets are offered in two sizes (16" and 22"), stripping pipe from 4 to 16 inches in diameter. They permit excavating down to and along both sides of the pipe to at least its horizontal diameter, thus completely freeing the pipe for take-up with no bending damage due to earth bind.

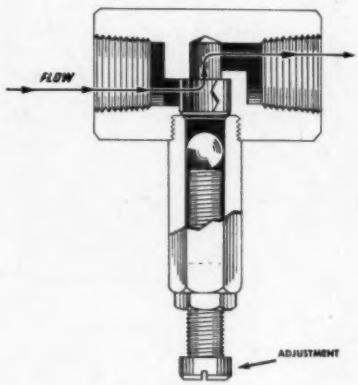
The contour of the Stripping Buckets greatly facilitates their following and staying on the line despite sidebends. Because the buckets are practically concentric with the pipe being exposed, all danger of tooth or rooter damage is avoided.

Details and literature are available by writing The Cleveland Trencher Company, 20100 St. Clair Ave., Cleveland 15, Ohio.

Velocity Limiting Valve

A Velocity Limiting Valve for use where top limits of flow velocity and volume are desired, has recently been introduced by Pneu-Trol Devices, Inc., Chicago.

Easily connected into any air or gas line, the valve, when set to any of its infinite number of pressure calibrations instantaneously shuts off line flow whenever the velocity or volume exceeds the desired setting. A stainless ball is pulled up against its seat and held in the "closed" position by line pressure whenever the flow exceeds the setting. When the pressure is exhausted, the ball drops off its seat and re-sets itself. Screwing the adjusting screw in or out of the valve lowers or raises the pressure



Velocity Flow Valve.

setting at which the valve closes.

The valve is available in ¼" pipe size—(other sizes special order), and is made of brass bar stock with stainless steel parts and internal fittings.

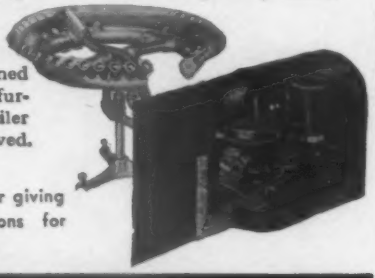
"The Gem of Them All"
COLUMBIA CONVERSION GAS BURNERS
More Popular Than Ever
With Home Owners and Dealers

DEALERS SAY—Columbia Nutipe Burner has a common sense design. Closely duplicates operation of appliance when solid fuel was used. Easy to install. Seldom requires service.

HOME OWNERS SAY—Gives quick heat transfer and earlier delivery of heat to rooms. Has tamper-proof controls and quiet operation.

MODEL P-ZE shown here is designed for use in warm air furnaces or round type boiler where grates are removed.

Send for free folder giving complete instructions for installing



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729 Ewing Street • Toledo 7, Ohio

Here's your purification material

CONNELLY IRON SPONGE

HIGHER EFFICIENCY
- Iron Sponge contains a highly active oxide with maximum capacity.
- Specially made shavings and patented chip filler available for less resistance and longer service.
- Connelly has developed the perfect, enduring alkali for all conditions.
- Suitable for high or low pressure purification.

HIGHER ECONOMY
- Reduces purifying costs because of more H_2S absorption with better and longer trace removal.
- Lowers operating and maintenance costs.

If you have a problem in gas purification, Connelly's 74 years' experience is available to you. Write for full details today.

CONNELLY Inc.

3154 S. California Ave., Chicago 8
Elizabeth, N. J., Los Angeles, Calif.

Dresser Opens New Service Depot at Houston

Celebrating the official opening of Dresser Industries, Inc., new division offices and service depot at Houston, Texas, an open house party in May marked the completion of the new facilities. More than 600 guests in the oil and gas industry and a number of Dresser officials inspected the new Gulf Coast headquarters.

Containing 6000 sq. ft. of office space, the new structure is of modern styling, and has in addition 14,000 sq. ft. of warehouse facilities available.

The new facilities will serve as the Gulf Coast headquarters for Dresser Industries, Inc., of Cleveland, Ohio, and five of its oil and gas equipment manufacturing subsidiaries: Clark Bros. Co., Inc. of Olean, N. Y.; International Derrick & Equipment Co.; Security Engineering Co., Inc. of Whittier, Calif.; Pacific Pumps Inc., Huntington Park, Calif.; and Kobe, Inc. of Huntington Park, Calif. In general, these Dresser companies will service the entire Gulf Coast, including all of Texas (excepting the Panhandle), Louisiana, Mississippi, Alabama, and parts of Oklahoma and New Mexico.

A feature of the new building is an outdoor "demonstration display" in the adjoining yard space.

"Outdoor Demonstration Display" adjoining new building of Dresser Industries at Houston.

Grand Home Appliance Has New Gas Range

On June 1 the Grand Home Appliance Co., Cleveland, shipped to its distributors a sample of the new model 349 range which was put into production that day.

The new product is a 37" range, with thermostatically controlled oven, smokeless broiler, etc. It has a divided cooking top with automatically lighted burners.

Tube Turns Moves Office in Los Angeles

The Los Angeles branch office of Tube Turns, Inc., manufacturers of Tube-Turn welding fittings and flanges, is now located in the General Petroleum Building, 612 South Flower Street. Norton P. Bosemer is manager of the branch.

Main offices and plants of Tube Turns are in Louisville, Ky.

Olson & Hazlett Promoted by Blaw-Knox

Chemical Plants Division of Blaw-Knox Company has announced appointment of Arne Olson as chief process engineer, and R. H. Hazlett as manager of the oil and gas department.

Mr. Olson's promotion transfers him from one of the company's manufacturing plants, where he has been chief engineer of process equipment. The promotion of Mr. Hazlett entrusts him with two responsibilities, for he is also manager of gas equipment at one of the company's manufacturing plants.

Leland B. Bonnett Appointed Director of A.G.A.

Appointment of Leland B. Bonnett, vice-president, Consolidated Edison Co. of New York, Inc., as a director of the American Gas Association, has been announced by H. Carl Wolf, managing director, A.G.A. Mr. Bonnett replaces John C. Parker, vice-president, Consolidated Edison, on the A.G.A. Executive Board.

Cribben & Sexton Add Personnel

Cribben & Sexton, of Chicago, Ill., has created a new department of marketing research and added to the sales promotion department. James Doyle comes to them from Armour & Company, where he was market research analyst. Bernard Kewin will assist John J. Brandt in sales promotion and public relations. He has had ten years promotional experience with appliances in utilities, and came from Servel.

Kollar With U. S. Radiator

R. G. Kollar has been made manager of the Radiant Baseboard Division of United States Radiator Corporation. He formerly represented Trundle Engineering Company, management engineers, in the Michigan area.

J. G. Kirpatrick Joins Brooks

The Brooks Rotameter Company, Landsdale, Pa., has announced appointment of John G. Kirkpatrick as exclusive representative in the Pittsburgh area. He has been instrument engineer for the Koppers Company for the past seven years.

CRUSE-KEMPER COMPANY

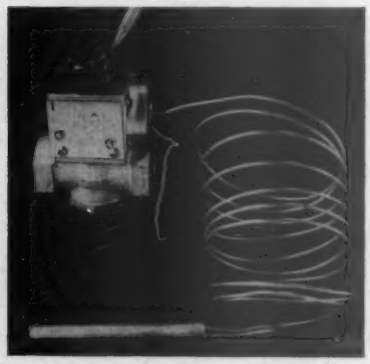
AMBLER, PENNA.

MORE THAN FORTY-FIVE YEARS OF SOUND

STEEL PLATE CONSTRUCTION

GAS HOLDERS PURIFIERS

Smith Has New Control for Heating Equipment



New Control

A new control device for gas conversion burners and hot water boilers has been developed by A. O. Smith Corp., Toledo, Ohio.

The company claims that the new equipment, called "Magic Heet" control, is low in cost, and that service requirements are negligible because of simplicity of design and operation.

M. L. Waring Is Promoted by Consolidated Edison

Mowton LeCompte Waring, planning engineer of Consolidated Edison Company of New York, since 1947, has been elected an assistant vice-president. Mr. Waring will assist James F. Fairman, vice-president in charge of electric and gas production and operation.

He has been with Consolidated Edison System since 1933.

Norge Heat Expands Gas Line

Norge Heat of Detroit, Mich., has expanded its gas-fired furnace line with a new series 500 winter air conditioners. There are two models, the F500-95 with an input AGA rating of 93,750 Btu and the F500-110 with an input AGA rating of 109,375 Btu.

These new units are highly styled and designed for easy installation in utility rooms, closets, and basements.

A new type of sectional heat exchanger provides heat transmission through the use of jet type gas passages. The combustion and heat exchanger are made of one piece 12 gauge steel construction.

New Small Boiler

Iron Fireman Manufacturing Co., Portland, Ore., has added a small gas-fired boiler to its line of heating units. It is enclosed in a cabinet 13 by 26 by 26 inches.

While single installations of the new boiler are for small homes, dual installations of the unit can be used in larger homes. They offer extreme flexibility of operation through the use of dual controls which permit both units to operate in cold weather for quick pick-up. After the room reaches normal temperature, one unit will automatically carry the load.

Blodgett Introduces Pyrastove

New Blodgett Pyrastove

A new gas-fired stove for bakeries, confectioneries, hotels, restaurants, etc., has been developed by the G. S. Blodgett Co., Inc., Burlington, Vermont.

Pilot models were installed in Burlington, Boston, New Haven, New York, Chicago, Milwaukee and Los Angeles, and have had more than a year of field testing.

Economics of Propane

(Continued from page 28)

days in a normal winter when the system demand will be a figure between the maximum demand and the maximum demand less the capacity of the propane-air plant. The size of the plant may also depend upon whether there is pipe line capacity to transport the propane-air gas from one plant to several towns or cities, or whether each city or town must have its own plant. In general, plants with a capacity between five million and ten million a day seem to be the most economical and flexible.

Estimates of plant construction cost can be simplified by separating them into two parts: first, the plant itself, that is, the controls, instruments, equipment, etc., used to vaporize, mix and send to market the required amount of propane-air gas; and, second, the storage and liquid handling faciilties of the plant.

The installed cost of storage is usually not difficult to estimate. The total installed cost for a propane storage tank having 30,000 gallons water capacity, including the tank, its foundations, its unloading and setting, the tank trim, instruments, piping, walkways, floodlights, in short, everything associated with the tanks and tank farm, will vary between $11,000 per tank for a ten tank installation and $9,000 per tank for a thirty tank installation.

Maximum Daily Plant Capacity in Equivalent MCF of Natural Gas	*Estimated Plant Cost Without Storage*	*Estimated Storage Cost for 6 Day Supply*
3	$ 75,000	$ 88,000
5	$112,000	$132,000
7	$145,000	$170,000
10	$195,000	$230,000
15	$272,000	$320,000
20	$353,000	$415,000

Estimating the cost of the plant itself is not quite so easy. Two plants, having exactly the same maximum daily capacity, will differ greatly in cost simply because one of them has a maximum operating pressure of 10Psig., and so requires only two 15 H.P. blowers to furnish air for the propane-air mixture, whereas the other plant operates at 100 Psig., and therefore, has to have two 150 H.P. two-stage air compressors furnishing air for the propane-air mixture. Obviously, all other factors being equal, the two plants cannot be constructed for the same cost. All propane-air plants require heat for vaporizing the propane. At some locations waste heat is available for this service; at others it is necessary to install boiler capacity for vaporization. Again, the construction cost of the two plants will vary. For general estimating purposes, it is more satisfactory to use cost figures for an idealized plant and location.

The accompanying tabulation of plant costs, for various maximum capacities, is for such an idealized plant location. It is an average good

(Continued on page 48)

Program Announced for Mid-West Gas School and Conference, Sept. 6-8

Lester J. Eck, President of the Mid-West Gas Association and vice-president and general manager, Minneapolis Gas Co., has announced plans for the twenty-sixth Mid-West Gas School and Conference, to be held at Iowa State College, Ames, Iowa, September 6, 7 and 8.

A new feature of the conference will be a servicemen's school on Servel air conditioning units, to be staged concurrently with the conference. Tentative plans call for some 20 to 30 servicemen to receive "shirtsleeve and overall" training under the direction of Servel, Inc. General chairman D. J. Reimers, of St. Peter, Minn., and program chairman Roy B. Searing, of Sioux City, Iowa, indicate that success of this new undertaking probably will dictate inclusion of similar courses of practical training on various types of appliances in future years.

The general program will consist of three sessions, devoted to general and technical subjects, and separate round table discussion meetings by the production, distribution, utilization and metering sections.

Included in conference papers will be Ordinances and Codes for Gas Operations, Odorizing of Gas, Safety in Large LP Gas Storage, Leak Detection, LP Peak Shaving Operations, Commercial and Industrial Meter Regulator Settings, Servicemen's Training, and Appliance Venting. Discussion topics for sectional meetings will follow suggestions received in advance.

Tentative plans have been made for an inspection trip to the manufacturing plant of the Fisher Governor Co. at Marshalltown, Iowa, on Thursday morning, September 8.

Hotel headquarters will be at the Hotel Sheldon-Munn, at Ames. The banquet will be held at that hotel on Tuesday evening, September 6.

Assistant Professor Marvin Gould, of the Engineering Extension Division of Iowa State College, is making arrangements for manufacturers' exhibits of gas meters, tools, regulators, instruments, etc.

Rockwell Has New Bulletin On Regulators

A new bulletin describing the complete line of Crawford pressure regulators has been issued by Pittsburgh Equitable Meter Division, Rockwell Manufacturing Co.

All details of regulator construction and application are shown in sectional views. These include standard outlet pressure control from a maximum of five psi inlet to inches of water, zero outlet pressure control, back pressure control; also used as a pressure relief valve, non-return valve and flow controller for maintaining constant flow rates regardless of pressure changes.

Typical performance curves are reproduced to help guide the selection of size and type. Complete tabular specifications, prices and weights for all sizes from ¾" through 6" are included.

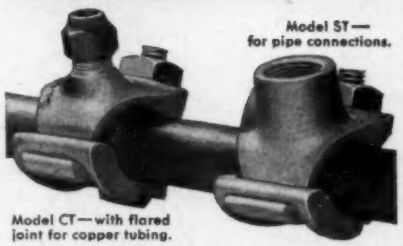
For copies of this bulletin—1044—write Pittsburgh Equitable Meter Division, Rockwell Manufacturing Co., Pittsburgh 8, Pa.

FPC to Investigate Rates at Washington

The Federal Power Commission on June 30 ordered an investigation of the rates and charges of Washington Gas Light Company and two of its subsidiaries, Potomac Gas Company and Prince George's Gas Corporation.

The Arlington County Board of Virginia filed a complaint April 25 asking FPC to investigate the rates charged by Washington Gas Light for natural gas delivered to Rosslyn Gas Company, a third subsidiary of the Washington company. Washington Gas Light purchases natural gas from Atlantic Seaboard Corporation, and Potomac transports this gas from the vicinity of Dranesville, Virginia, to a point in Arlington County where it is delivered to the Rosslyn Company. The complaint charged that Washington purchases gas from Atlantic Seaboard at 33 cents per Mcf, and in turn sells it to Rosslyn for 53 cents,

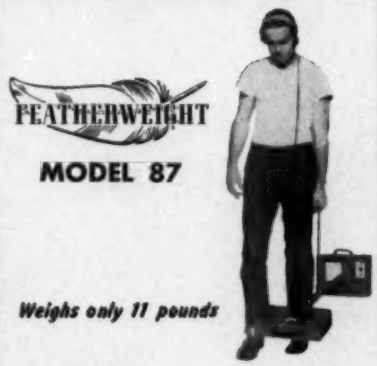
Quick easy way
TO MAKE GAS AND WATER CONNECTIONS
FOR REFRIGERATORS, LAUNDRIES, WATER-HEATERS, ETC.



SKINNER-SEAL SADDLE TEE—for making gas and water connections. No pipe cutting or threading. Quick. Easy. Cuts costs. For gas refrigerators, home laundries, heaters, etc. Write for circular.
Approved by Underwriters' Laboratories, Inc.

M. B. SKINNER CO.
SOUTH BEND, 21, IND., U. S. A.

Goldak
PIPE LOCATORS



- Saves TIME and MONEY by Rapidly Locating Mains, Services and Stubs
- Fast, Easy One-Man Operation
- Low Operating Cost

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CLEVELAND
"A" TYPE METERS
"B" TYPE METERS
DIAPHRAGMS
Cleveland Gas Meter Co.
ESTABLISHED 1875
2009 Rockwell Ave., Cleveland 14, O. Phone CHerry 2351

Jersey Central Asks for Natural Gas Line

Jersey Central Power & Light Co., Asbury Park, N. J., has asked the Federal Power Commission to authorize construction of a 39.4-mile natural gas pipe line connecting the company's coast division system with Texas Eastern Transmission Corporation's Big Inch Line. Estimated overall cost of the project is $1,208,200.

The proposed 10-inch line would connect with the Big Inch line near Bound Brook, and extend southeasterly to Jersey Central's gas manufacturing plant in Long Branch. Natural gas received from Texas Eastern would be mixed with manufactured gas at the Long Branch plant for distribution in Monmouth and Ocean Counties.

Texas Eastern previously was ordered by the Commission to deliver up to 5,000,000 cubic feet of natural gas per day to Jersey Central, which now distributes only manufactured gas in Cape May, Ocean, Monmouth and Morris Counties. The gas service areas in Cape May and Morris Counties will continue to be supplied entirely with manufactured gas, the application states.

Southern Men Talk Service

Representatives of a dozen distributing utilities, members of the Southern Gas Association, assembled in Nashville, Tenn., on June 17, to attend a distribution conference on the subject of work on consumer premises. J. S. Wilder, Alabama Gas Corporation, Birmingham, was chairman.

The round table discussion method was followed, with no prepared papers, and the information forthcoming was designed to be of practical value to the representatives responsible for the customer aspects of the several companies' operations.

Although it was shown that most of the utilities have similar practices with respect to the types of service rendered to customers' appliances, there was no uniformity in the matter of charges.

Among other things, discussion evoked the information that most companies regulate free of charge gas appliances sold by dealers. Some companies make charges ranging from $2 to $10 for cleaning and servicing floor furnaces.

None of the companies reported any standard charge for servicing water heaters. In most instances it was found that the practice is to regulate water heaters free of charge, but to charge for parts and labor in the cleaning and changing of water heater tanks.

It is almost standard practice to calibrate oven heat controls and regulate gas ranges free.

Those companies having two-way radio control cars reported it as being an economical investment in saving service men's time. It was agreed that where this type of control is in use the most effective way to dispatch service men from one job to another is to assign them to only one call at a time, as they report in after the completion of an assignment.

FPC Not to Reopen Oak Ridge Pipe Line Case

The Federal Power Commission has denied one request for reopening, and another for rehearing, in the proceedings in which FPC recently authorized East Tennessee Natural Gas Co. to build pipe line facilities to supply 60,000,000 cu. ft. of natural gas a day to the Atomic Energy Commission's plant at Oak Ridge, Tenn.

The two requests were filed jointly by the National Coal Association, Railway Labor Executives Association and United Mine Workers of America.

The first joint application, filed with FPC June 2, asked for rehearing, reconsideration, revocation, and abrogation of the Commission's findings and order of May 3 authorizing construction of the Oak Ridge line. This application claimed, among other things, that FPC predicated its findings of public convenience and necessity "solely on the basis of the strong representations made by the Atomic Energy Commission."

In denying this application, FPC pointed out that the language was cited out of context and "fails to give proper effect to our findings read as a whole." When read in context, the Commission continued, it is clear that the May 3 findings and order "were reached upon consideration of the entire record."

The second request, filed June 13, asked the Commission to reopen the proceedings for the purpose of considering, in connection with the June 2 application for rehearing, a report of a subcommittee of the Congressional Joint Committee on Atomic Energy on the Oak Ridge pipe line project.

The Commission pointed out that the request is not authorized under FPC's Rules of Practice and Procedure, since it was not filed before the issuance of the Commission's May 3 order.

Berlin Airlift

(Continued from page 18)

5100 tons a month or 170 tons a day.

The maximum saving in coal and coke would be up to 700 tons a day. The saving in the Airlift would be 500 tons a day or 15,000 tons a month, representing 1500 plane flights a month and a saving of approximately $2,500,000 monthly.

The suggestion was made, however, to start with a utilization of 30 tons of propane a day either for enriching or diluted propane mixing or both. This quantity of propane could be obtained from European refineries and even in smaller quantities in Germany. If instead of saving 90 tons a day in Airlift weight, 90 tons of propane were to be shipped each day, the gas sendout in Btu could have been increased approximately 50 per cent using the safe Airlift planes and at the same cost.

We made a project for all equipment needed for transportation of the propane from the refineries to Berlin. T. Gilbert, of Cutler Hammer Inc., studied with us a project for automatic enriching and mixing equipment operating either with propane or butane or a mixture thereof.

Such equipment would have also kept the heat content of the gas constant and would have corrected the present large variations caused by the absence of the gas holders.

The end of the necessity for the Berlin Airlift solved the above problems and much better, of course. However, for the first time in history a project to ship propane by air was studied and found feasible and economical.

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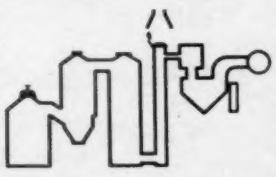

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Coal Gasifier Operates

A significant development in the work on synthetic liquid fuels from coal has been disclosed by James Boyd, Director of the Bureau of Mines, with the announcement that a successful full-scale test run had been made in the new coal gasification unit at Louisiana, Mo.

A part of the Bureau's Gas Synthesis (Fischer-Tropsch) Demonstration Plant, this coal gasifier—probably the largest unit ever installed for direct production of synthesis gas from finely powdered coal and oxygen—is the second of the plant's five units to be completed, Boyd said. An oxygen production unit has been in operation for several months, and remaining units will be finished during 1950.

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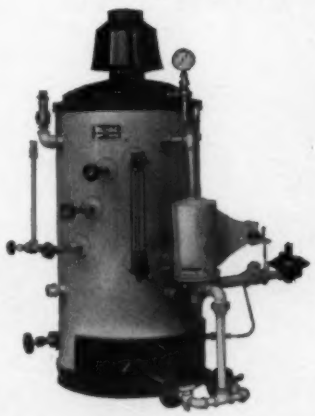

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Economics of Propane

(Continued from page 44)

location, just outside a third or second class city. There is a railroad siding at the plant site, with room for at least six flat cars. The plant site is clear and level. Soil bearing is at least 2,000 pounds per square foot at foundation level. Neither electric service, city water nor steam are available. The required discharge pressure of the plant is 75 Psig. (The maximum that can be developed single stage.)

Development of Costs

It is sheer coincidence that regardless of size, these idealized plants will, on the average, cost about 85% as much as the installed cost of the storage tanks necessary for a six day supply for that size plant. Such figures are, of course, not specific enough to be used for contract purposes, but they are good enough for preliminary planning. To develop such preliminary figures for any capacity plant it is only necessary to remember three items: first, the $9.000 to $11,000 cost of standard storage tanks; second, that two and one half million cubic feet of equivalent natural gas can be stored in each tank; and third, that 85% of the cost of the necessary storage for six day operation will be the approximate cost of the rest of the plant.

For example, if it were required to find the approximate cost of a propane-air plant having a maximum equivalent natural gas capacity of 4 MMCF per day, then a six day supply for the plant would be 24 MMCF and at 2.5 MMCF per tank ten tanks would be required to store a six day supply of propane. The price per tank in lots of ten was $11,000 and the storage portion of the plant would cost approximately $110,000. The cost of the boilers, compressors, vaporizer, mixing controls, and other equipment for the 4 MMCF per day plant would then be 85% of $110,000, or $93,500.

Increasing Demand

Until 1944, it was general practice for propane-air plants to depend on winter delivery for from one-half to two-thirds of their requirement. Since 1944, many plants, both large and small, have been built. The total volume of propane used has increased by geometrical progression. Each year the volume used was about one and a half times that of the previous year. Of course, the supplier has increased his production capacity and transportation facilities. In spite of this increased supply and the fact that "distress" material was available during the entire winter season of 1948-49, it is the writer's opinion that for a normal winter season the winter time demand for propane may again exceed both the supply and the transportation facilities.

Delivery Rates

Most of the large suppliers of propane will deliver material on a one to one basis, a few will only deliver one-half the quantity per month in the winter time that they deliver during the summer, and only one or two will deliver at the ratio of one and a half in the winter to one in the summer. The winter price is usually higher than the spring and summer price. Two years ago the winter price was almost twice as much as the summer price. The only safe way is to provide enough storage for essentially all of the winter season requirements. As mentioned earlier, each storage tank has a water capacity of 30,000 gallons, and during the winter period can be used to store about 27,000 gallons of propane. This amount of propane is approximately equivalent to two and one-half million cubic feet of natural gas. To get the total number of tanks required, it is then necessary to divide the total volume of gas to be furnished in the winter season by 2.5; the result will be the number of tanks. For practical estimating purposes, 11,000 gallons of propane is equivalent to one million cubic feet of natural gas.

Increase in Plant Costs

The construction costs of propane-air plants have increased materially during the past four years. The amount of this increase has been almost 10% per year. Unlike most construction, the direct labor cost of a propane-air plant is only about 12% of the total cost of plant and storage; consequently, the total cost of a plant is materially changed by any change in steel costs.

In general, the plants should have a long life and a low depreciation charge. The current total cost of propane-air gas delivered into the natural gas line, on the peak day, and against a pressure of 75 Psig. is about $1.40 per MCF of equivalent natural gas. Of this amount $1.10 is the cost of the propane and $.30 is direct operating cost. When used to "shave" peaks, and with a demand-commodity rate, a plant may pay for itself in three to five years. For example, suppose it was determined that the peak demand, for which the charge is $2.00 per MCF per month, could be lowered by 10 MMCF through the use of a propane-air plant having a maximum daily capacity of 10 MMCF and operating at various rates up to 10 MMCF per day for a total of twenty days, during which time it would replace a total of 80 MMCF of natural gas. By the methods mentioned earlier, the total number of tanks required to store a full winter supply for this plant would be 32, at a total installed cost of approximately $278,000. The 10 MMCF per day plant, to go with this storage, will, by the estimating method given before, cost about $190,000. The total estimated cost of plant and storage is then $468,000. Reducing the peak demand by 10 MMCF will produce a gross reduction in the annual demand charge of $240,000. But at a total production cost of $1.40 per MCF for the equivalent propane-air gas, it will cost $112,000 to save the $240,000, and the net saving will be $128,000. With an estimated total plant cost of $468,000, this rate of saving will pay for the plant in about three and two-third years.

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